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Monterey, California



THESIS

TIME AND MATERIALS CONTRACTS:
A MANAGEMENT GUIDE
FOR PRE & POST AWARD

by

Gary A. Broadwell

June 1994

Thesis Advisor:

Dr. David V. Lamm

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Time and Materials Contracts:
A Management Guide
for Pre & Post Award

by

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Lieutenant, United States Navy
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Submitted in partial fulfillment
of the requirements for the degree of

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ABSTRACT

This thesis investigates and analyzes the principal features and sources of difficulties associated with the Time and Materials (T & M) contract and how these difficulties might be mitigated. Through personal interviews and a review of available literature, the research suggests ways to structure and manage T & M contracts during the pre-award phase, including incorporation of possible incentives, to motivate both the Government and the contractor to perform T & M contracts as efficiently as possible. Further, the research examined the administration and monitoring of T & M contracts during the post award phase, in order to mitigate the difficulties inherent during this portion of the contract. The research effort serves as a management guide which will benefit both Procuring Contracting Officers (PCO) and Administrative Contracting Officers (ACO) in the successful structuring and administration of T & M contracts.

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I. INTRODUCTION

A. PURPOSE OF THE RESEARCH

Contracting officers are faced with many decisions in their capacity as the intermediary through which Government requirements are satisfied by products and services provided from civilian contractors. One of the key early decisions is the difficult choice of contract type considering the multitude of different pricing mechanisms available. The two general classifications of contracts are fixed-price and cost reimbursement. Within these general classifications, the Government has at its disposal a total of 21 different contract types to apportion the degree of risk to each party [Ref. 1:p.309].

This thesis will closely examine one such contracting method, the Time and Materials (T & M) contract, which is a hybrid contract, containing elements of both fixed price and cost reimbursement type contracts [Ref. 2:p.190]. The thesis will identify the current areas of difficulty associated with the use of T & M contracts and suggest pre-award and post award features to institute to mitigate these potential difficulties.

A comprehensive review of current literature revealed no dedicated and compact source for properly structuring nor

adequately monitoring T & M contracts, despite their continued use within the Department of Defense (DOD). Through examination and analysis of current, but diverse, available data and interviews with key contracting personnel, a management guide was developed to consult during the pre and post award phases to help fill this void and to assist in minimizing the potential adverse effects of the T & M contract. Because the T & M contracting method has the potential to incur great cost risk to the Government, this management guide would benefit both the Procuring Contracting Officer (PCO) and the Administrative Contracting Officer (ACO) in the efficient and effective execution of T & M contracts.

B. SCOPE OF RESEARCH

This thesis will identify and propose a management guide for the proper structuring and administering of T & M contracts. The research will examine pre-award and post award actions the contracting officer can take to ensure efficient performance of the Government requirement. Although T & M contracts are used throughout the Government and commercial sectors, with only limited differences in ideology and usage, this research effort will focus only on DOD.

C. RESEARCH QUESTIONS

The following research questions were addressed during this research.

1. Primary Research Question

What are the principal features of the Time and Materials (T & M) contract that are the sources of difficulties and how might these difficulties be mitigated?

2. Subsidiary Research Questions

- What are the principal characteristics of the T & M contract?
- When are T & M contracts commonly used?
- What are the common difficulties of T & M contracts?
- What are the factors and characteristics of the T & M contract which lead to difficulties?
- What have various buying organizations used in order to control T & M contracts?
- What checks and balances (incentives and deterrents) could a buyer implement during the pre-award phase that would assist in motivating and ensuring the contractor performs a T & M contract as efficiently as possible?
- What performance surveillance could be applied during the post award phase to mitigate the potential difficulties of using T & M contracts?

D. RESEARCH METHODOLOGY

The research methodology employed during this study encompassed two primary efforts.

1. Literature Review

An extensive review of the available literature related to T & M contracts was conducted with materials obtained from the Dudley Knox Library, the Federal Procurement Data Center (FPDC), the Navy Procurement Management Reporting

System (PMRS), and the Defense Logistics Studies Information Exchange (DLSIE). Additionally, a review of defense regulations and supplementary directives, previous theses, and current publications and periodicals relating to contracting methods in general, and T & M contracts specifically, was also performed. The literature review was conducted to determine the extent and scope of T & M contract coverage, and to obtain background information on T & M usage, difficulties, and regulations governing their use.

2. Interviews

A series of interviews were conducted with several organizations responsible for the pre-award phase of T & M contracting. In addition, numerous interviews were also conducted with several organizations which were primarily engaged in the post award phase and monitoring of T & M contracts. Interviews were chosen over surveys for the "richness" of data that could be gathered from a personal interview over an often impersonal, survey. The interview process provided the opportunity to probe deeper into complicated areas than would be afforded using a survey. The majority of these interviews were conducted by phone due to the vast geographical area covered. These interviews were conducted to ascertain what, if any, differences exist between actual field usage and control of T & M contracts, and what is prescribed in regulations. A list of interviewees and their

activities is provided as Appendix A. Appendix B provides the interview questions.

E. LIMITATIONS AND ASSUMPTIONS

Although a T & M contract is essentially a fixed rate contract regarding its hourly charge, the thesis will focus primarily on the potential difficulties during the variable portion of the contract, namely the variability in labor hours charged during the performance of the contract. However, since difficulties can also arise in the material portion of the T & M contract, material related problems will also be addressed to provide a complete picture of T & M contract difficulties.

This study will not address the possibility of alternate contracting methods available for use by the contracting officer but will take as a given that the T & M contract is the only contractual vehicle available for a particular Government requirement. Because the T & M contract is among the least preferable of the various contracting methods and is normally used only as a last resort [Ref. 3:p.1], the analysis will address how the contracting officer can best manage the T & M contract, given that a determination has been made that the T & M contract is the best pricing mechanism available for a particular Government requirement.

For the purposes of this study, it is assumed that the reader is generally familiar with the procedures and

terminology used in the Federal Government contracting environment.

F. ORGANIZATION OF THE STUDY

In order to understand the overall significance of T & M contracting within DOD, the thesis will first provide a general background and framework for the T & M contracting method in Chapter II. The chapter will define the principal features of the T & M contract, including its elements, general applications, limitations, and general surveillance requirements. This is followed by a discussion on the extent of T & M contract use within the Federal Government and the Department of the Navy. After this general background, an assessment of risk toward the Government is presented, illustrating where T & M contracts rank in relation to other major contracting methods.

With Chapter II as background, Chapter III contains a full analysis of T & M contract usage within DOD. The chapter will first present the traditional applications of T & M contracts as gathered from the literature review. Included is information on the Department of the Navy's use of T & M contracts as gathered from the PMRS. This is followed by a presentation of the many varied applications noted during the personal interviews. With this information as a foundation, an analysis of T & M contract usage, including range and depth, patterns, and trends, will be presented.

Chapter IV will closely examine the difficulties with T & M contracts. Characteristics of the T & M contract which lead to difficulties will first be analyzed as a framework for understanding the current problems faced in DOD. A presentation of both actual pre-award and post award T & M contract difficulties will then be made, highlighting the information gathered in personal interviews and the literature review. The chapter will end with an analysis of these difficulties.

Chapter V analyzes pre-award controls and proposes controls and/or incentives which can be implemented to mitigate the pre-award difficulties reported in Chapter IV. The controls advocated can serve as a management guide to reference during the pre-award phase for properly structuring and initiating T & M contracts to mitigate potential difficulties. Chapter V also includes an examination and analysis of two proposed incentives which might be built-into the T & M contract to incentivize both the Government and the contractor to perform the contract as efficiently as possible.

Chapter VI analyzes post award controls and proposes controls and surveillance methods which can be implemented to mitigate post award difficulties. Included is an examination of general surveillance requirements, factors, and responsibilities. The controls proposed can serve as a management guide to reference during post award for properly monitoring T & M contracts to mitigate potential difficulties.

Chapter VII presents the conclusions and recommendations of the researcher. Included are answers to the primary and subsidiary research questions, and recommendations for further research.

II. BACKGROUND

A. INTRODUCTION

This chapter provides background information on the Time and Materials (T & M) contract. The chapter will begin by defining the principal features of the T & M contract, including a general description and presentation of the T & M elements, general applications for T & M use, limitations imposed by regulations, and general surveillance requirements. This is followed by a discussion on the extent of T & M contract use within the Federal Government and the Department of the Navy (DON). With this as a general background, the chapter will conclude with an assessment of risk toward the Government, illustrating where T & M contracts rank relative to other major contracting methods.

B. PRINCIPAL FEATURES OF T & M CONTRACTS

1. Description and Elements

In general terms, T & M contracts and the closely related Labor Hour contract are hybrids of fixed-price and cost reimbursement type contracts (A Labor Hour contract is essentially a variation of the T & M contract, differing in that only labor, and not materials, is supplied by the contractor). Labor is provided on an indefinite quantity, fixed-price basis and materials are provided on a cost

reimbursement basis [Ref. 4:p.4-17]. As stated in the Federal Acquisition Regulation (FAR):

A time-and-materials contract provides for acquiring supplies or services on the basis of (1) direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit and (2) materials at cost including, if appropriate, material handling costs as part of material costs.
[Ref. 5:part 16.601(a)]

From the FAR description above, two primary components constitute the priced line items on a T & M contract; labor and materials. However, in actual usage reported by a large number of buying activities contacted during personal interviews, T & M contracts generally contain three priced elements: labor; materials; and travel. In order for the Government to have adequate assurance that the costs incurred under a T & M contract are reasonable, the contractor obviously must possess a valid accounting system to track these elements [Ref. 5:part 16.104(h)]. Reimbursement procedures for the different priced elements are outlined below.

a. Labor Element

The fixed labor rate in a T & M contract is a fully burdened labor rate which covers the contractor's direct (wages) and indirect costs (overhead and G & A) and provides for a contribution to profit. The contractor may present labor vouchers monthly (or more frequently, if authorized by the contracting officer) for payment. The contractor must substantiate labor vouchers by evidence of actual payment and

by individual daily time cards, or an equivalent. Payment of overtime premiums must also be approved by the contracting officer in advance. Overtime rates must be negotiated if no overtime rates are provided in the contract schedule and overtime work is approved in advance by the contracting officer. Failure to agree upon these overtime rates shall be treated as a dispute under the Disputes clause. [Ref. 5:part 52.232-7]

Although the labor rate is a fixed hourly charge, considerable variability in the total labor charge is present due to the potential uncertainty in the number of hours charged by the contractor in the performance of the contract. There is also uncertainty in the material costs since the nature of the work effort, and hence the extent of materials required, is unknown at the time of contract award. [Ref. 3:p.3]

b. Material Element

Material is priced by one of two methods. First, and the most common method, is for all material to be reimbursed at cost plus material handling costs [Ref 5:part 16.601b(2)]. In this method, material handling costs must be clearly excluded from the labor-hour rate (i.e. material handling costs will not be included in the overhead or General and Administration (G & A) pools used to determine the fixed hourly labor rate). Material handling costs may include all appropriate indirect costs allocated to direct materials in

accordance with the contractor's usual accounting practices consistent with FAR part 31 [Ref. 5:part 16.601b(2)]. The contractor will be reimbursed for materials by the Government only when actual payment for the materials is substantiated. Further, the contractor must attempt to obtain materials at the most advantageous prices available, taking all cash and trade discounts, rebates, allowances, credits, salvage, and commissions available. [Ref. 5:part 52.232-7]

The second method of pricing material is an option outlined in the FAR, when the work to be performed for the Government requires the contractor to provide materials that it would normally provide to the general public during its normal business [Ref. 5:part 16.601b(3)]. This method can only be elected when the total estimated contract price does not exceed \$25,000 or the estimated price of material does not exceed 20 percent of the estimated contract price. The material to be so charged must be identified in the contract, and again, no element of profit on material so charged can be included as profit in the fixed hourly labor rates. Further, the contract must provide: (a) that the price to be paid for such material shall be based on an established catalog or list price, less all applicable discounts to the Government, and (b) that the Government shall pay no more than the sales price to the contractor's most favored customer or the current market price, whichever is lower. [Ref. 5:part 16.601(b)(3)]

Profit is not allowed on material costs since all reasonable material handling costs may be included in the charge for material, thereby eliminating all risk involved in the contractor obtaining materials to satisfy the Government requirement [Ref. 5:part 52.232-7]. Because profit is already included in the fixed labor hour charge to compensate the contractor for the potential uncertainty in a Government requirement, there is no need for further profit compensation for material which is reimbursed at cost. The Government's position is to compensate a contractor with profit for his expected level of risk [Ref. 6:p.131]. This is accomplished in a T & M contract by allowing profit as part of the fixed labor hour charge, where uncertainty can exist, not in material costs where uncertainty is low and all allowable material handling costs are included in material costs.

A final requirement related to the material element (but also related to the labor element) is the approval of subcontractors. The contractor must obtain the contracting officer's written consent before placing any subcontracts for furnishing any of the work called for in the contract, except for the purchase of raw materials or commercial stock items [Ref. 5:part 52.244-3(a)].

c. Travel Element

Although travel is not in the traditional definition of a T & M contract, it is found often enough in

T & M contracts as a third priced element, in conjunction with labor and material, to warrant consideration here. The principal occasion travel is included is when the T & M pricing arrangement is combined with the Indefinite Delivery Type Contract (IDTC). When included in a T & M contract, travel, including transportation, lodging, and per diem, is reimbursed at rates established in the Federal Travel Regulation (FTR), Joint Travel Regulation (JTR), or the Standardized Regulations section 925 [Ref. 5:part 31.205-46]. Because the travel element is rather straight forward and is not a "strict" T & M element, it will not be mentioned further.

2. Application

Appropriate applications of T & M contracts can be quite diverse, combining the T & M pricing arrangement with other contracting methods. The FAR states,

A Time-and-Materials contract may be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence. [Ref. 5:part 16.601(b)]

The presence of uncertainty in the exact times and/or quantities of future deliveries and the potential to have multiple ordering activities, at the time of contract award, often merges the T & M pricing arrangement with the Indefinite Delivery Type Contract (IDTC), or "D" type contract. A T & M contract can however, also be established as a definitive "C"

type contract. Type "C" contracts include definitive quantities, deliveries, and Statements Of Work (SOW) for one buying activity. The "D" type variant of the T & M contract however, is much more common than the "C" type. For this reason, a discussion of the basic aspects of the IDTC is in order to acquaint the reader with the common linkage of combining a T & M pricing arrangement with an IDTC.

Indefinite Delivery Type Contracts, or "D" type contracts, are used when there is recurring demand for an item, but the timing or full extent of demand cannot be determined when the contract is written [Ref. 7:p.13]. The contract establishes all the terms that are certain, and delivery orders are not placed against the contract until the need arises. Delivery orders from various ordering activities are used to place specific and detailed delivery orders against the IDTC. Indefinite Delivery Type Contracts identify the estimated costs, prices, and kinds of services or supplies to be delivered, but are prevented by uncertainty at the time of contract award from stating precise quantities and/or delivery schedules [Ref. 7:pp.11-13].

There are three types of Indefinite Delivery Type Contracts: Indefinite Quantity (ID-IQ); Requirements Contracts (ID-RC); and Definite Quantity (ID-DQ) [Ref. 5:subpart 16.5]. The ID-IQ supports delivery of an indefinite quantity of designated supplies or services for a specified contract period, and states a minimum obligation by the

Government along with a maximum quantity, above which the contractor is not obligated to perform. The ID-IQ type is the most extensively used IDTC by the Navy [Ref. 8:p.3-3]. The ID-RC supports exclusive delivery from one supplier of specified supplies or services for a fixed period of time. Once in place, the contractor is treated as a sole source for all supplies or services specified in the contract. Unlike the ID-DQ type, there is no minimum order guarantee by the Government with a ID-RC, however, the contracting officer shall state a realistic estimated total quantity in the solicitation and resulting contract. The ID-DQ type supports the performance of specific services or providing specific materials at designated locations for a given contract period. Only the actual performance and delivery schedules are unknown at contract award. [Ref. 5:subpart 16.5]

Any fixed-price or cost reimbursable pricing mechanism (or combination) cited in the FAR Part 16 can be used in an IDTC, which greatly varies the level of potential risk. Fixed price orders placed against IDTCs for services are classified as Type I delivery orders. Cost reimbursable orders (including T & M contracts) placed against an IDTC are classified as Type II delivery orders. [Ref. 7:p.13]

Figure 1, on the following page summarizes the above information and highlights the relationships and flexible qualities of the T & M contract.

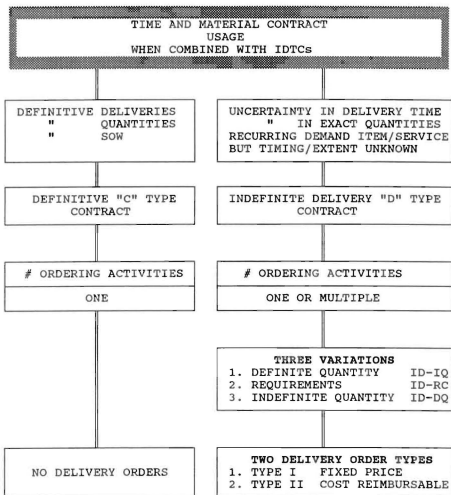


Figure 1. T & M Contract Usage Variations

Source: Developed by Researcher

In actual use by buying activities, the T & M pricing arrangement is most frequently combined with the IDTC-Requirements Contract (ID-RC), or IDTC-Indefinite Quantity Contract (ID-IQ), with one or more requiring activities initiating delivery orders against the IDTC. As a further variation, they are also routinely established as multiple year contracts with a base year plus option years. Chapter III will closely examine T & M usage within DOD.

3. Limitations

The FAR delineates two general limitations on the use of T & M contracts which must be clearly documented in the contract file: the requirement for a Determination and Findings (D & F); and the requirement for a ceiling price. [Ref. 5:part 16.601(c)]

a. Determination and Findings

Before a contracting officer can award a T & M contract, he/she must conclude that no other contract types are suitable for procuring the needed supplies or services, and substantiate this by executing a written Determination and Findings (D & F) [Ref. 5:part 16.601(c)]. The D & F shall set forth enough facts and circumstances to clearly and convincingly justify the use of a T & M contract over a less risky pricing arrangement and shall be considered final after approved by higher authority [Ref. 6:p.87]. The requirement

for a D & F finds its roots in the United States Code, Title 10 and Title 41 [Ref. 9] [Ref. 10].

Approval levels of the D & F vary only slightly between the different military departments. Within the Department of the Air Force, a D & F must be approved at least one level higher than the contracting officer [Ref. 11:part 16.601]. Within the Department of the Navy, field purchasing activities without assigned counsel must obtain approval of their cognizant regional procurement office or the Naval Supply Systems Command (NAVSUP), before entering into T & M contracts [Ref. 8:p.4-13]. The intent of the stringent D & F approval process is to encourage contracting officers to thoroughly review any and all historical cost data, and award T & M contracts only as a last resort. Once historical data are available, contracting officers should avoid continued use of the T & M contract and negotiate fixed-price contracts [Ref. 5:part 16.103(c)].

b. Ceiling Price

The T & M contract must also include a ceiling price that the contractor exceeds at its own risk [Ref. 5:part 16.601(c)]. The Government shall not be obligated to pay the contractor any amount in excess of the ceiling price in the contract schedule, and the contractor shall not be obligated to continue performance if to do so would exceed the ceiling price, unless the contracting officer notifies the contractor,

in writing, that the ceiling has been increased and indicates the revised ceiling in the written notice.

If at any time the contractor has reason to believe combined labor and material costs over the next 30 days will exceed 85% of the ceiling price, the contractor must provide the contracting officer a revised estimate of the total price to the Government with supporting reasons and documentation [Ref. 5:part 52.232-7(c)]. This clause provides the contracting officer advance notification of potential overruns.

4. Surveillance

A T & M contract provides little or no incentive for the contractor to control labor and material costs since additional hours spent on a contract result in increased profits to the contractor [Ref. 3:p.3]. Therefore, it is essential to perform appropriate Government surveillance to provide the Government reasonable assurance that efficient methods of cost control are employed by the contractor.

The Government's rights to surveillance are broad. The Government has the right to inspect and test all materials furnished and services performed under the T & M contract, at all places and times, including the period of performance, and in any event before acceptance [Ref. 5:part 52.246-6(c)]. The Government may also inspect the plant of the contractor or any subcontractor engaged in contract performance, provided the

inspections do not unduly delay the work [Ref. 5:part 52.246-6(c)]. The Government may also require the contractor to replace or correct services or materials that at the time of delivery failed to meet contract requirements at any time during contract performance, but not later than six months after acceptance of the services or materials last delivered under the contract. The labor hour cost of replacement or correction shall be reduced to exclude that portion of the rate attributable to profit. [Ref. 5:part 52.246-6]

Additionally, the contracting officer may request an audit of the invoices or vouchers and substantiating material at any time before final payment under the contract [Ref. 5:part 52.232-7(e)]. The Department of Defense FAR Supplement (DFARS) also states the requirement to distribute a copy of the T & M contract to the appropriate Defense Contract Audit Agency (DCAA) office to ensure proper surveillance and increase visibility of T & M contracts [Ref. 12:part 204.201]. These rather stringent requirements are due in large part to the inherent cost risk of the T & M contract.

C. EXTENT OF T & M CONTRACT USAGE

Table I on the following page is an illustration of the extent of T & M contract use within the Federal Government for fiscal year 1992, listing the total T & M contracting actions and their dollar value for those departments or agencies

reporting T & M use to the Federal Procurement Data System (FPDS) [Ref. 13:pp.75-199].

TABLE I

**SNAPSHOT OF FEDERAL TIME & MATERIALS
CONTRACTING BY DEPARTMENT AND AGENCY
FISCAL YEAR 1992**

DEPARTMENT/AGENCY	ACTIONS	DOLLARS (000)
Dept. of Agriculture	14	\$ 904
Dept. of Commerce	116	11,860
Dept. of Defense	12,266	3,007,227
Dept. of Education	99	8,650
Dept. of Energy	76	21,421
Dept. of Health & Human Services	15	2,839
Dept. of Housing and Urban Develop.	1	351
Dept. of the Interior	156	4,770
Dept. of Justice	817	119,985
Dept. of Labor	19	1,876
Dept. of State	92	20,129
Dept. of Transportation	324	58,581
Dept. of Treasury	35	2,024
Dept. of Veterans Affairs	4	138
Agency for International Develop.	646	105,338
Environmental Protection Agency	1,352	134,092
Equal Employment Opportunity Comm.	11	291
Federal Emergency Management Agency	55	1,233
General Services Agency	118	15,409
National Aeronautics & Space Admin.	83	5,412
National Science Foundation	30	3,039
Nuclear Regulatory Commission	16	3,317
Office of Personnel Management	1	104
Peace Corps	3	83
Securities and Exchange Commission	1	200
Smithsonian Institution	2	840
U.S. Arms Control and Disarm. Agency	2	125
U.S. Information Agency	3	1,842
TOTALS	16,357	\$3,532,080

Source: Data synopsized from [Ref. 13:pp.75-199]

Table I shows that DOD is by far the greatest user of T & M contracts within the Federal Government, comprising 75% of the total T & M contracting actions and 85% of their total dollar value. It also shows that T & M use is not exclusive to DOD and in fact is prevalent throughout the Federal Government. The table further illustrates that since over \$3.5 billion in Federal funds are allocated using T & M contracts, it is essential that contracting officers fully understand the implications of their use.

Table II below displays the extent of T & M contract use within the Department of the Navy between fiscal years 1984 and the first five months of 1994.

TABLE II

SNAPSHOT OF T & M USE WITHIN THE
DEPARTMENT OF THE NAVY
FOR FISCAL YEARS 1984 TO 1994

YEAR	# ACTIONS	DOLLAR VALUE
1984	2425	\$ 274,133,000
1985	2667	283,187,000
1986	3550	430,289,000
1987	4124	547,837,000
1988	4427	607,028,000
1989	4555	652,045,000
1990	5063	758,359,000
1991	5495	844,182,000
1992	5311	885,822,055
1993	5195	878,090,211
1994 Note 1	1353	310,721,353

Note 1: October 1993 through February 1994 only

Source: Synopsized from [Ref. 14]

Table II shows a 114 percent increase in the number of contracting actions and a 220 percent increase in the dollar value of T & M contracts in the 10 year period ending in fiscal year 1993. It does however, also indicate that T & M contracting actions and total dollars spent on T & M contracts have decreased somewhat since their peak years of 1991 and 1992, respectively.

Table III on the following page displays a breakdown by number of T & M contracting actions and total dollar value of T & M contracts solicited under various solicitation procedures for fiscal years 1989 to 1993. The upper portion of Table III shows that over 50 percent of all T & M contracting actions are awarded by Full and Open Competition - Competitive Proposal. It also shows that one in five T & M contract actions are Set Asides and slightly more than one in five T & M contract actions are awarded by Other Than Full and Open Competition (but the ratio is improving).

Interestingly, Table III also shows a marked increase in Architect-Engineer solicitation procedures using T & M contracts, particularly between 1992 and 1993. Further, there has been a steady increase in both contract actions and total dollar value, in the use of T & M contracts for Basic Research. These data indicate an expansion in the use and diversity of use of the T & M contract within the Department of the Navy.

TABLE III

**T & M CONTRACT SOLICITATION PROCEDURES
BY CONTRACT ACTIONS AND DOLLAR VALUE
FOR FISCAL YEARS 1989 TO 1993**

NUMBER OF T & M CONTRACT ACTIONS							
Y E A R	SELECTED SOLICITATION PROCEDURES						TOTAL
	A	B	D	E	K	N	
89	52	2223	2	1	941	1323	4555
90	18	2680	5	0	1134	1219	5063
91	5	3025	0	1	992	1468	5495
92	7	3081	1	3	1090	1120	5311
93	4	2985	25	3	1125	1048	5195
DOLLAR VALUE OF T & M CONTRACTS							
Y E A R	SELECTED SOLICITATION PROCEDURES						TOTAL (000)
	A	B	D	E	K	N	
89	10,565	283,018	191	719	134,216	222,910	\$652,045
90	10,631	351,208	312	0	175,804	220,214	758,359
91	472	403,086	0	81	149,184	291,186	844,182
92	6,266	405,613	49	352	219,661	253,184	885,822
93	5,188	451,751	6,209	715	214,559	199,328	878,090
S O L I C I T A T I O N P R O C E D U R E S C O D E S							
A: Full and Open Competition - Sealed Bid							
B: Full and Open Competition - Competitive Proposal							
D: Architect-Engineer							
E: Basic Research							
K: Set Aside							
N: Other Than Full and Open Competition							

Source: Synopsized from [Ref. 14]

Whereas Tables I through III show the overall extent of T & M contract use within the Federal Government and the Department of the Navy, Chapter III will discuss the specific applications of T & M contracts, both from a traditional sense and according to actual usage reported by various buying organizations.

D. RISK ASSESSMENT

Figure 2, on the following page shows graphically how T & M contracts rank, in terms of risk toward the Government, when compared to other major contracting methods, including the Firm-Fixed Price (FFP); Fixed Price with Economic Price Adjustment (FPE); Fixed Price Incentive (FPI); Cost Sharing (CS); Cost-Plus-Incentive-Fee (CPIF); Cost-Plus-Fixed-Fee (CPFF); and the Cost-Plus-Award-Fee (CPAF) type contracts.

The primary factor which places T & M contracts above all others in terms of risk is the lack of contractor incentive to control costs [Ref. 3:p.3]. Under T & M contracts, contractors can earn additional profit by expending additional hours. The negotiated labor hour rate includes a percentage for overhead and G & A expenses which are fixed costs. Once these fixed costs are covered, that portion of the negotiated labor rate attributable to overhead and G & A expenses becomes profit to the contractor for each additional hour expended. Also the negotiated hourly labor rate for T & M contracts

includes a percentage of profit. Therefore, each additional hour expended results in additional profit.

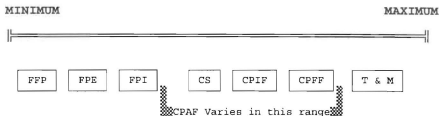


Figure 2. Risk Analysis Continuum

Source: Developed by Researcher

Other factors which contribute to this higher risk as reported in personal interviews, which are not present in cost reimbursable contracts, include the incentive for the contractor to use lower skilled personnel and the ease of awarding T & M contracts. These and other factors contributing to difficulties will be further discussed and analyzed in Chapter IV.

The risk of a T & M contract can also be so great that the contract exceeds the bounds of the preceding continuum and becomes illegal, as in the case when the T & M contract resembles a Cost-Plus-a-Percentage-of-Cost (CPPC) contract. Although the CPPC contract was used extensively during and preceding World War I, the extensive abuses caused it to be prohibited [Ref. 15] [Ref. 16]. The statutory language

prohibits a "system of accounting" and not merely a type of contract. Generally, if the contract arrangement can assure the contractor greater profits by incurring additional costs, it is considered a CPPC contract and is illegal. The Comptroller General has developed a fourfold test for determining if an agreement/contract violates the CPPC provision [Ref. 17]:

- Payment is on a predetermined percentage rate;
- The predetermined percentage rate is applied to actual performance costs;
- The contractor's entitlement is uncertain at the time of contracting; and
- The contractor's entitlement increases commensurately with increased performance costs.

All four factors must be present for the arrangement to be illegal. For example, a T & M contract calling for payment of overhead and profit at 15% and 10% of cost respectively was found to be illegal since the predetermined rates were applied to actual costs after the fact, and the contractor and Government did not know the full extent of his future entitlement at the time of entering into the contract [Ref. 18]. Although T & M contracts can have results similar to the illegal CPPC agreement, the Comptroller General has upheld their legality provided a dollar ceiling was fixed in advance [Ref. 19].

Although Figure 2 illustrates the "potential" risks of T & M contracts relative to other contract types, it should be noted that these risks can be lessened through effective planning and structuring in the early stages and adequate control and surveillance during post award. Only by understanding the characteristics of the T & M contract which contribute to difficulties can a contracting officer effectively mitigate the potential risks associated with the T & M contracting method. Chapter V will closely examine and analyze contract controls to implement during pre-award to mitigate these potential risks, while Chapter VI will closely examine and analyze post award surveillance features.

E. SUMMARY

Chapter II has identified the background for T & M contracts including a presentation of the principal features, encompassing its elements, general applications, limitations, and general surveillance requirements. This was followed by a general discussion on the extent of T & M contract use within the Federal Government and the Department of the Navy, and an analysis of risk toward the Government. The next chapter will discuss and analyze T & M contract usage within DOD.

III. TIME AND MATERIALS CONTRACT USAGE

A. INTRODUCTION

A thorough understanding of T & M contract usage is essential to fully comprehend the prevalence of this contracting method and the extent of potential difficulties that could be encountered. The degree of T & M contract use is by no means limited, but in fact is significant within DOD. This chapter provides information and analysis of T & M contract usage within DOD to illustrate its significance. The chapter begins with a general discussion on traditional applications of T & M contracts as gathered from various literature. This is followed by a presentation of data gathered from the Navy Procurement Management Reporting System (PMRS) which illustrate the specific types of supplies and services obtained under the T & M contracting method within the Department of the Navy (DON). Finally, specific reported applications of T & M contracts noted during personal interviews with various DOD buying activities will be presented to further display the diverse applications of T & M contracts.

The chapter will end with an analysis of actual T & M contract usage in the field as compared to the traditional usage outlined in the literature. This analysis will focus on an examination of differences in range and depth. Finally, an

analysis of patterns and trends in actual T & M contract usage is also presented. This analysis will include a proposed list of factors which summarize and support the use of T & M contracts.

B. TRADITIONAL APPLICATIONS OF T & M CONTRACTS

A literature review revealed a limited number of T & M contract applications. The FAR states,

A T & M contract may be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence.
[Ref.5:part16.601(b)]

No further guidance is provided in the FAR, leaving substantial opportunity for contracting officers to determine, for themselves, appropriate uses for T & M contracts. The DFARS also provides no general guidance on appropriate uses of T & M contracts.

Other available literature describes T & M contract use in very general terms. An Air Force audit report states, "Time and Materials contracting is appropriate for the initial stages of programs with urgent and compelling requirements that could not be expeditiously met using other contract types." [Ref. 3:p.1] Time and Materials contracts are often used for repair and overhaul services when the condition of items to be repaired cannot be predicted with confidence and there is no previous experience to indicate the amount of

repairs that may be required [Ref. 20:p.287]. They are also used for engineering services and research [Ref. 21:p.7].

The literature review revealed a very limited range of T & M contract use. To summarize, the major categories noted were: repair and overhaul; engineering services; and research and development.

C. T & M CONTRACT USE WITHIN THE DEPARTMENT OF THE NAVY

Data were gathered from the Navy Procurement Management Reporting System (PMRS) DD350 database to amplify the general data found in the literature review and to determine, more specifically, the types of supplies or services obtained under the T & M contracting method. Table IV presents a partial synopsis of the top five items procured using T & M contracts for fiscal years 1990 to 1994 within DON.

Table IV shows that the largest majority of T & M contracting within DON can be grouped into nine broad categories: Engineering and Technical Services; Research, Development, Test and Evaluation (RDTE); Program Management & Support Services; Installations; Maintenance and Repair; ADP Systems Development & Facility Operations; Logistic Support Services; Technical Representative (TECHREP) Services; and Marine Architect - Engineer (A-E) Services.

TABLE IV

**TOP FIVE T & M CONTRACT ITEMS PROCURED
FOR THE DEPT. OF THE NAVY, FY90 TO FY94**

ITEM	ACTIONS	DOLLARS
1 9 9 0		
Engineering Technical Services	711	\$92,487,000
RDTE	472	71,443,000
Program Management/Rpt/Support Svc	277	65,538,000
Installations	596	62,503,000
Maintenance and Repair	528	61,784,000
1 9 9 1		
ADP System Development/Facility Ops	383	82,428,000
Installations	588	77,767,000
Maintenance and Repair	644	77,671,000
Engineering Technical Services	582	72,272,000
Logistic Support Services	532	68,820,000
1 9 9 2		
Engineering Technical Services	510	113,258,618
Installations	699	98,725,632
Maintenance and Repair	695	81,312,079
Program Management/Support Svcs	339	78,782,414
Logistic Support Services	488	61,316,976
1 9 9 3		
Maintenance and Repair	716	290,860,927
Engineering and Technical Services	610	103,340,109
Logistic Support Services	525	77,250,614
ADP System Development/Facility Ops	351	54,933,921
TECHREP Services	330	30,155,861
1 9 9 4 (Oct. 1993 through Feb. 1994)		
Engineering and Technical Services	210	49,380,329
Marine Architect - Engineer Svcs	112	39,717,262
Maintenance and Repair	150	36,327,326
Program Management/Support Services	124	34,857,679
ADP System Development/Facility Ops	131	28,758,706

Source: Synopsized from [Ref. 14]

Table IV however, does not truly portray the great variety of supplies or services procured in the Navy using the T & M contract. Appendix C is provided to further illustrate an example of the full breadth of items procured by the Navy under the T & M contract. Appendix C is a complete listing of the different supplies/services procured in the Navy in fiscal year 1993 using the T & M contracting method. The list includes the total number of contract actions by category and their total dollar value.

D. SPECIFIC APPLICATIONS OF T & M CONTRACTS

Personal interviews with several DOD buying activities were also conducted to complete the picture on T & M contract use within DOD. The interviews revealed many varied applications of the T & M contract. This section will provide a sampling of the variety of supplies or services that are procured using T & M contracts. The various applications will be discussed in the order of their reported frequency of use.

In all, 17 buying activities were contacted and asked to describe the various supplies or services procured under the T & M pricing arrangement. A list of interviewees and their activities is provided in Appendix B. Each activity was asked to report all appropriate categories to illustrate the total realm of their T & M contract usage. Although some similarity exists between categories, subtle differences exist to warrant

a breakdown into 12 separate categories. Table V below summarizes the responses to this interview question. Descriptions of each category follow Table V.

TABLE V

**APPLICATIONS OF T & M CONTRACTS
REPORTED DURING PERSONAL INTERVIEWS**

TYPES OF SUPPLIES OR SERVICES PROCURED USING T & M CONTRACTS	FREQUENCY OF USAGE
Repair & Overhaul incl. Troubleshooting	14
TECHREP Services	9
Engineering Services	3
Research & Development	3
Initial DLR Repairs	2
Design Services	2
Environmental Architect-Engineering Svcs	2
Hazardous Waste Clean-up	2
Computer Software Development	1
Groundskeeping & Maintenance	1
Development & Providing of Training	1
Zero T & M Use	1
Total Number Buying Activities Contacted	17

Source: Developed by Researcher

1. Repair, Overhaul, and Troubleshooting Services

Repair, overhaul, and troubleshooting services was the most common category of T & M contract use. Nearly all buying activities contacted (14 of 17) reported use of T & M contracts for these services with diversity only in the type of equipment or system involved. Examples of different equipment/systems reported in this category included:

- Test and evaluation of shipboard electronic systems.
- Calibration of gauges.
- Software debugging.
- Troubleshooting and repair of telecommunications (telephone) equipment.
- Troubleshooting and repair of Command & Control Switching Systems (Red Switch Network).
- Troubleshooting and repair of various mechanical, electrical, electronic, or hydraulic systems.

Contracts for the performance of maintenance, overhaul, modification, troubleshooting, and repair of various items often contain Over-and-Above work requirements (sometimes referred to as "open and inspect" provisions) [Ref. 12:subpart 217.77]. When incorporated in a contract, Over-and-Above work requirements must be established as separate line items on the contract. The Over-and-Above concept tasks the contractor to open up a piece of equipment and identify needed repairs and then recommend corrective action to restore the system during contract performance. The contractor submits a separate work request to identify the Over-and-Above work and, as appropriate, the Government authorizes the contractor to proceed. [Ref. 12:subpart 217.77]

Seven of the fourteen activities reporting use of T & M contracts for repair, overhaul, and troubleshooting services, incorporated Over-and-Above work requirements. The Over-and-Above concept frequently combined the T & M pricing mechanism with the FFP pricing mechanism as two separate

contract line items. A common application reported was to use a T & M pricing arrangement for the open and inspect line item of the repair to determine the extent of work required to fully restore the equipment or system. The contractor then prepared a written estimate of remaining labor and materials to complete the job under a FFP line item. Performance does not resume until a FFP contract is negotiated for completion of the work.

2. Technical Representative (TECHREP) services

Technical Representative (TECHREP) services also had a high incidence of T & M contract usage, where it was cited by over half of the buying activities contacted (9 of 17). Production contracts, which are normally fixed price, generally have a line item for TECHREP services, after the system is initially fielded, which are priced under a T & M pricing arrangement. Repair and troubleshooting services by TECHREPs are commonly established under T & M contracts for several reasons.

First, the extent of repair work required for newly fielded systems, components, or equipments is often difficult to predict with certainty. A T & M contract is deemed more appropriate than a fixed-price contract under these conditions.

Second, T & M contracts are extremely responsive to dynamic fleet needs. The contracting activity establishes an

Indefinite Quantity IDTC (ID-IQ) with a contractor for TECHREP services, negotiating up-front various different types of technicians and their associated labor rates. The requiring activities then place delivery orders with ceiling prices, as the need arises, for: TECHREPs to ride Navy ships for Sea Trials, or other important evolutions, to ensure new systems function properly; TECHREPs to fly out to Navy ships to assist in a Casualty Report (CASREP) repair of a vital piece of equipment; or other specific repair requirements of active fleet units.

Third, T & M contracts, and subsequent delivery orders, are quickly awarded for emergent repairs. Since labor rates are fixed and negotiated in advance, it is only a matter of determining the type of technician needed and estimating a ceiling for labor hours and materials. This process takes only a couple of hours, whereas a cost reimbursable contract often takes days or weeks to award, causing undue delay.

Fourth, T & M contracts with ceiling prices are desirable by requiring activities due to their ease of budgeting. The actual maximum repair cost is known up-front (unless the ceiling price is exceeded) allowing for more accurate budgeting. This budgeting advantage does not apply under a cost reimbursable contract since it often takes months to ascertain the exact cost of the repairs.

3. Engineering Services.

Whereas repair, overhaul, and troubleshooting refers to restoring a system which is not functioning, the engineering services category encompasses tasks such as installation, modification, tuning, or removal of systems, components, or equipments. Engineering services also includes enhancements and design changes to improve system performance. A FFP contract would normally be used if the nature of the work effort could be accurately predicted, however when the uncertainty of the work effort was too great, a T & M contract was used.

4. Research and Development (R & D)

Use of the T & M pricing mechanism for R & D was not only limited in frequency but limited in depth. The R & D was generally in the form of a limited duration fast-engineering study to have an expert consultant conduct a quick probe or investigation into a particular engineering problem area. Although similar to troubleshooting, it is concerned more with improving system performance rather than restoring malfunctioning systems.

5. Initial Depot Level Repairable (DLR) repairs.

Although this category is similar to the first category mentioned, one activity reported a unique argument for its intentional use of T & M contracts for repair efforts. This activity noted that initial repairs of various DLRs in

general, and the TARTAR system specifically (the TARTAR system is a shipboard medium range missile system used by the Navy), are sometimes performed under the T & M contracting method due to advances in bar-coding technology. Under previous procedures, DLR troubleshooting and repair for DLRs returned during the early stages of fielding the system, were usually conducted under fixed-price contracts which may not have been advantageous to either the Government or the contractor. Examples of the two pricing mechanisms are provided to illustrate the advantage of using a T & M pricing arrangement.

a. Troubleshooting Under a Fixed-Price Contract

The TARTAR system has a large majority of its DLRs bench-tested and troubleshot over the same piece of test equipment. As an example, if 100 of these items were troubleshot in the past, for a total of 1500 hours, their average troubleshooting time would be 15 hours each. These 15 hours would be used as a basis to establish a fixed-price contract. In reality however, some low cost items took fewer (or more) hours, while some high cost items took more (or fewer) hours. Compounding the uncertainty, TARTAR DLRs experienced great variability in the nature of their troubleshooting and repairs. Technology was not available to track individual DLR repair histories to use as a basis for accurately estimating future repairs. Under a fixed-price contract, either the Government or the contractor could lose

substantially when only the average price was used and actual repairs differed from the average price estimate.

b. Troubleshooting Under a T & M Contract

With new technology however, certain individual DLRs are bar-coded and encoded with all applicable repair information, providing a complete repair history (this level of tracking was previously only conducted on high dollar items, such as aircraft engines). These "back-up data," as they are called, are now requested by the Government to support hours charged under a T & M contract. This pricing arrangement benefits both the Government and the contractor since the Government is only paying for actual repair time and the contractor is not hurt if their estimates are inaccurate (as in the case of the fixed-price example). Over time, if consistency is shown for the same, specific repairs for an item, a fixed-price contract would be used.

6. Design Services

In the specific application cited by the buying activity, the design services were for the design of customized habitability packages for shipboard applications. The services were established as an ID-IQ, with the Government promising to award any and all shipboard habitability design work for a stated period to the contractor that submitted the lowest responsive and responsible fixed-labor rate bid.

7. Environmental Architect & Engineering (A-E) Short Studies

The environmental contracting division of one Air Force command included a T & M pricing mechanism to provide environmental, engineering, and scientific support services to prepare short studies to ascertain how to effectively remove Hazardous Waste (HW) from various ground sites. These contracts were also established as ID-IQ contracts, with several contractors, to stimulate competition. As of the date of the interview however, no delivery orders had been issued against the T & M line items.

8. Emergent Hazardous Waste (HW) Clean-up Services

The above environmental contracting division also incorporated a T & M pricing arrangement into some of their environmental contracts for emergent HW clean-up services. The T & M line item was added as a contingency for emergent HW spill incidents when time was not available to put together a proposal and carry out the normal contracting process. The initial contract was established as a completion type ID-IQ contract with requiring activities initiating delivery orders as the need arose. As of the date of the interview, no delivery orders were initiated against the IDTC for emergent clean-up services.

9. Computer Software Development & Grounds Maintenance

One buying activity recalled seeing T & M contracts used for software and grounds maintenance in the past but

stated neither would likely be candidates for current T & M contracts since other pricing mechanisms would be more appropriate. Specifically, computer software development would likely be under a cost reimbursable contract, while grounds maintenance would be awarded as a FFP under sealed bid procedures.

10. Development of Navy Training Courses

One very creative use of the T & M contract was instituted by the Navy Regional Contracting Center, Long Beach Detachment for the Vertical Launch System (VLS) training program. The training program included contractor-provided instructors for training Navy personnel in VLS, and contractor development of VLS training material for ultimate purchase and use by the Navy. The T & M pricing mechanism was chosen over a FFP contract due to its flexibility, ease of administration, and responsiveness to fleet needs.

Adequate pricing information was available on instructor labor costs, material costs, and course lengths to award FFP contracts, however, the multitude of possible training course combinations made use of a number of FFP contracts administratively burdensome. Course durations and specific instructor requirements varied greatly in the Navy's VLS training requirements. The market for VLS training was also extremely competitive, with numerous companies eager to

win the contract; in some cases bidding labor rates below costs.

In this environment, the contracting officer found it much easier, and more responsive to customer needs, to establish fixed-labor rates for various categories of instructors and training material preparers on an IDTC. This allowed user/customer commands to initiate delivery orders, putting together different combinations of tailored training requirements, to meet their training needs. A separate delivery order would be prepared for each training need delineating the number of instructors required, duration of training, etc., and a ceiling on the number of hours.

The T & M contract was beneficial to both the contractor and the Government. The contractor benefitted from this arrangement due to the ease and speed of administration, thereby keeping the overhead contribution of VLS training very low. This allowed the contractor to still make a profit since the overhead rate for VLS training was lower than their overall corporate overhead rate.

The Government customer also benefitted through much reduced Procurement Administrative Lead Time (PALT), excellent flexibility to tailor fleet training needs, and ease of budgeting. Unlike the situation in a cost reimbursable contract where the customer activity may not know for months how much a service will ultimately cost, the T & M pricing arrangement with a ceiling price allowed the customer to know

the full extent of their obligation up-front. The T & M arrangement also provided minimal to no opportunity for abuse, since the user could clearly define their requirement in the total number of labor hours on the delivery order, and since the level of competition was extremely high.

11. Zero Use of T & M Contracts

One Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) activity reported zero use of T & M contracts even though the nature of their work would traditionally be a haven for T & M use. This was a personal choice of the contracting officer who deemed the inherent risks of the T & M contract to be unacceptable. The contracting officer mainly awarded Cost-Plus-Fixed-Fee (CPFF) and Cost-Plus-Award-Fee (CPAF) contracts.

E. ANALYSIS OF T & M CONTRACT USAGE

The analysis of T & M contract usage will focus on an examination of differences in range and depth between traditional uses outlined in the literature review and actual uses reported by DOD buying activities. This is followed by an appraisal of patterns and trends noted in actual applications.

1. Range

The literature review revealed T & M contract usage in very general terms. For example, the FAR stated,

A T & M contract may be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence. [Ref. 5:part 16.601(b)]

This application leaves considerable interpretation to contracting officers since no mention is made of any specific applications. The remaining literature outlined earlier in this chapter suggested only three broad categories for T & M use: repair and overhaul; research and development; and engineering services. These three broad categories do indeed encompass a large portion of actual T & M contract use however, the actual use of T & M contracts by buying activities suggests a much broader range.

In addition to the three broad categories outlined in the literature, Tables IV and V, and Appendix C indicate a much broader range of T & M contract usage. Figure 3 on the following page is provided to propose a much broader range of T & M contract usage.

2. Depth

The depth of actual T & M contract use is much greater than that suggested by the literature. Armed only with generalities in the literature for use of T & M contracts, DOD contracting officers have developed many creative uses of this contracting method, as illustrated in section D of this chapter. Appendix C also clearly indicates a multitude of

various services which have been procured within the 15 proposed categories outlined in Figure 3.

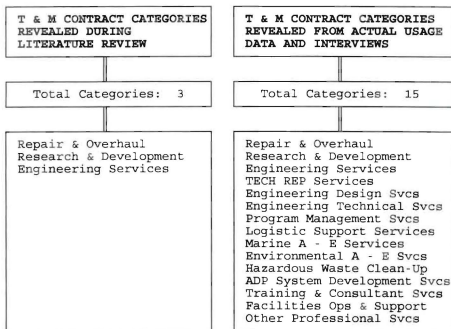


Figure 3. Range Difference in T & M Contract Categories

Source: Developed by Researcher

3. Patterns

Several patterns in T & M contract use were noted during the personal interviews. These patterns are outlined on the following page:

- In all cases, a ceiling price was established and a D & F was completed by the buying activities as required by the FAR.
- No T & M contracts were observed for supplies; all were for services.
- All but two buying activities (the activity using bar-coding technology for DLR repairs and the activity using T & M contracts for VLS training requirements) indicated that the T & M contract was awarded because historical cost information was not available and uncertainty was too great to award a FFP contract.
- Nearly all the T & M contracts discussed were base year plus option year contracts; with the average being one base year plus two option years.
- All T & M contracts discussed were "D" type IDTCs with Type II Delivery orders. No buying activities contacted reported use of "C" type T & M contracts, although each buying activity acknowledged that T & M contracts can be "C" type contracts as well.
- All activities indicated that IDTC T & M contracts were useful when it was not possible to predict when specific work must start or for situations when work must start quickly, allowing for great flexibility.
- A majority of the activities preferred only using T & M contracts when the work to be performed was located on Government facilities to allow closer surveillance.
- All activities stated that T & M contracts made budgeting very easy for the requirements activities since costs were known at the outset (unlike in a cost reimbursable contract).
- Well-defined labor categories and a relatively low total dollar value were viewed as desirable by most buying activities before awarding T & M contracts.
- All activities noted a financial advantage to the Government when the contractor was locked into a fixed-labor rate during times of inflation.
- All contracting officers indicated competition was highly desired before awarding a T & M contract.

A common denominator for using T & M contracts, noted by all buying activities, is uncertainty in the nature/extent of services. This implies that uncertainty in the magnitude and bounds of the work effort is a dominant factor in choosing a T & M pricing arrangement. The patterns above also suggest several other factors which should be considered before choosing a T & M contract. Figure 4 below summarizes the factors which should be considered before selecting a T & M pricing arrangement.

FACTOR	BEST WHEN...
Uncertainty Data Availability Irregularity Location Surveillance Value Emergency Labor Categories Competition Budgeting	duration of work effort is uncertain. cost or pricing data are not available cannot predict when work is needed. work is performed at a Govt. facility. Govt has adequate monitoring resources contract is for a low dollar value. work needs to start quickly. various labor categories well-defined. level of competition is high. certainty is required in final cost.

Figure 4. T & M Contract Usage Factors

Source: Developed by Researcher

4. Trends

Two distinct yet opposing trends in T & M contract use were observed from the personal interviews and from the data acquired from the Navy PMRS. Each is discussed below.

a. Increase in Government Use of T & M Contracts.

Interviews with contracting officers indicated a reluctance to award T & M contracts unless a majority of the factors outlined in Figure 4 were present however, there has been a marked increase in the use of T & M contracts. Table II from Chapter II shows a 119 percent increase in the number of contracting actions and a 223 percent increase in the total dollar value of T & M contracts issued in DON for the period 1984 to 1992. Federally, T & M contracting actions and dollars spent have increased 22 percent and 26 percent, respectively, between 1990 and 1992 [Ref. 1:p.322] [Ref. 13].

This enormous increase in T & M contract use is not consistent with a "reluctance" to award T & M contracts, but in the researcher's opinion, is more likely due to the many advantages of T & M contracting. These advantages include: ease of pre-award administration and award; ease of budgeting; flexibility to meet customer needs; and the financial advantage for the Government during periods of inflation. These advantages will be discussed further in Chapter IV.

The data in Table II also show a slight downward trend in Navy T & M contracting actions (beginning in 1991) and total dollar value (beginning in 1992). Annualizing the five month figures for 1994 would correspond to a projected 3,247 contracting actions and \$745,731,247 in T & M dollar value for 1994, the lowest figures in over five years. This

slight downward trend, beginning in 1991, appears to correspond with a comment made by one DON contracting officer who stated that the Secretary of the Navy issued guidance during this period to limit the use of T & M contracts due to their proliferation between 1984 and 1991 [Ref. 22]. As illustrated in Table II, there was a 208 percent increase in dollars allocated under T & M contracts during this period.

b. Contractor Reluctance to Accept T & M Contracts.

The traditional view of the Government is that the contractor prefers T & M contracts since they are incentivized not to control material or labor costs [Ref. 21:p.1]. Comments from all the Government buying activities however, revealed a distinct financial disadvantage to contractors when using T & M contracts during inflationary periods. This disadvantage was also confirmed in a discussion with an industry contract negotiator who indicated a reluctance to accept T & M contracts during actual or anticipated periods of inflation [Ref. 23].

The fixed-labor rate negotiated in a T & M contract can be a heavy financial burden during periods of rising prices. It forces the contractor into being reimbursed only for the lower, negotiated fixed-labor rate, regardless of how his labor costs and overhead may increase during the term of the contract. This problem is exacerbated when the T & M contract is combined with a base year plus option years IDTC. Because options are always exercised in favor of the

Government, the Government can place a heavy financial burden on a contractor by exercising an option, further locking the contractor into an untenable fixed-labor rate. The contractor, therefore, generally prefers cost reimbursable contracts over T & M contracts since labor rates are not fixed. [Ref. 23]

F. SUMMARY

Chapter III has presented a comprehensive picture of T & M contract usage and applications to serve as a basis for understanding the potential problems of this contracting method. The chapter began with a review of the narrow scope of T & M applications outlined in the available literature. The scope was broadened by examining the Navy PMRS to determine the various categories of supplies or services obtained within DON using T & M contracts. The scope was further broadened by conducting personal interviews with various DOD buying activities to gain valuable insight not available from the more impersonal literature and statistics. The differences in usage in terms of range and depth, between the applications referred to in the literature and those reported by DOD buying activities, were then analyzed. Finally, an examination of patterns and trends in T & M contract usage was conducted to provide insight into the potential problems that may be encountered when using the T & M pricing arrangement.

Chapter IV will discuss the common difficulties experienced with T & M contracts during pre and post award. The chapter will also examine and analyze the characteristics which lead to these difficulties.

IV. DIFFICULTIES WITH TIME AND MATERIALS CONTRACTS

A. INTRODUCTION

This chapter will provide a thorough background and analysis of the difficulties that are associated with T & M contracts. The discussion will begin with an examination of the characteristics of T & M contracts which can contribute or lead to difficulties. This is followed by separate presentations of difficulties actually encountered during the pre-award and post award phases of the T & M contract. Finally, an analysis of the difficulties will be conducted.

An analysis of T & M contract difficulties is essential to properly formulate a management guide for use during the pre and post award phases to mitigate potential problems. Only by thoroughly understanding the potential difficulties of the T & M contract can a contracting officer effectively learn from the mistakes of the past and institute adequate controls for preventing their recurrence. Chapters V and VI respectively, will use the information presented in this chapter to propose management guides to reference for properly forming and monitoring T & M contracts during the pre and post award phases.

B. CHARACTERISTICS WHICH LEAD TO DIFFICULTIES

The T & M contract possesses several characteristics which contribute to potential difficulties. Some of these features are unique to the T & M contract and some, although not unique to T & M contracts but present in other cost reimbursable type contracts, are such predominant occurrences in the T & M contract to be considered inherent difficulties.

There are in essence five principal characteristics of T & M contracts which when combined, can breed a host of potential difficulties. The first three characteristics described below are unique to the T & M contract. The remaining two can be associated with both T & M contracts and cost reimbursable type contracts. The remainder of this section will describe these five characteristics.

1. Fixed Profit Percentage Built Into Fixed-Labor Rate Creates Opportunity for Increased Costs Leading to Increased Profits

The most obvious characteristic of the T & M contract which can lead to difficulties is the fact that a fixed profit percentage is built into the negotiated fixed-labor rate. Although the labor rate is fixed, the quantity of labor is highly variable during contract performance, creating an opportunity for the contractor to increase his profit by simply increasing the quantity of labor used. A simple example is provided in Figure 5 to illustrate.

- EXAMPLE -

Increased Labor Quantity
Creates Increased Profit

A contractor is hired to repair a malfunctioning ship-board magnetic compass since ship's force was unable to affect repairs. Both parties agreed to a T & M contract since the extent of required repairs was unknown. The agreed on fixed-labor rate of \$30.00 per hour included overhead, G & A, and a 10 percent profit. The job should have taken three hours however, the inefficient repairman took eight hours to accomplish the work. A ceiling is placed at 8 hours. A comparison of costs follows:

	Contractor Finishes in 3 hours	Contractor Finishes in 8 hours
Fixed-Labor Rate	\$ 90.00	\$ 240.00
Materials	110.00	110.00
Total Cost to Govt.	200.00	350.00
Profit to Contractor	9.00	24.00

Figure 5. Example of Increased Labor »» Increased Profit

Source: Developed by Researcher

The simple example in Figure 5 illustrates the disincentive for a contractor to complete a job on time or early, since his profit clearly increases as the labor quantity increases. The contractor is incentivized to finish as close to the ceiling as possible or even to attempt increasing the ceiling.

2. **Fixed Elements of Overhead and G & A Built into Fixed-Labor Rate Creates Opportunity for Higher Realized Final Profit Percentage**

A more subtle characteristic of the T & M contract, which contributes to difficulties, is that other fixed elements, besides profit, are built into the negotiated fixed-labor rate prompting a final profit percentage greater than what was originally contemplated by the contractor, as labor quantity increases.

A contractor uses a form of unit costing to determine a fixed-labor rate for a T & M contract [Ref. 24:p.N13-N17]. The fixed-labor rate is composed of direct, indirect, and G & A costs, as well as profit. Direct costs are clearly identified to a contract (e.g. labor cost) and are generally the basis in which overhead is allocated. Indirect costs (i.e. overhead) are those fixed and variable costs which cannot be identified to the specific contract (e.g. Fixed: rent, insurance, property taxes, depreciation, etc.; Variable: supervisory and support labor, indirect supplies, fringe benefits, etc.). General and Administrative (G & A) costs are also fixed and variable costs which cannot be identified to the specific contract and not identifiable to the operational aspect of the business (e.g. Fixed: office and staff salaries, etc.; Variable: custodial services, headquarters payroll, etc.). The overhead and G & A rates, and a desired profit percentage, are all established before the start of the accounting period and contract award. [Ref. 20:p.275]

The negotiated fixed-labor rate therefore, is partially composed of fixed overhead and G & A cost elements.

Once the fixed cost elements are covered, that portion of the negotiated labor rate attributable to fixed overhead and G & A expenses becomes additional profit for each additional hour expended. This is on top of the separate profit percentage built into the negotiated fixed-labor rate. This concept is called overabsorbed overhead and is graphically illustrates in Figure 6.

Overabsorbed overhead takes place in T & M contracts when labor hours are increased beyond what is actually necessary to complete the Government requirement. The fixed total of overhead expenses must be assigned over the total volume of business activity (in the form of labor hours) so that for example, if volume (in the form of labor hours) is doubled, the per-unit cost for fixed expenses (fixed portion of overhead) will be cut in half. In other words, in the case of a T & M contract, if the total number of labor hours is increased beyond what the initial overhead rate was based on (for example from using more hours than necessary to complete a job), the realized ending overhead rate would be lower than what was built into the fixed-labor rate, causing the contractor to be reimbursed for more overhead than was necessary to complete the job. The "extra" overhead turns into profit. The greater the proportion of fixed expenses in total overhead, the greater will be the fluctuation in per-unit overhead charges because of changes in production volume

(labor hours) and the greater the effect of overabsorbed overhead.

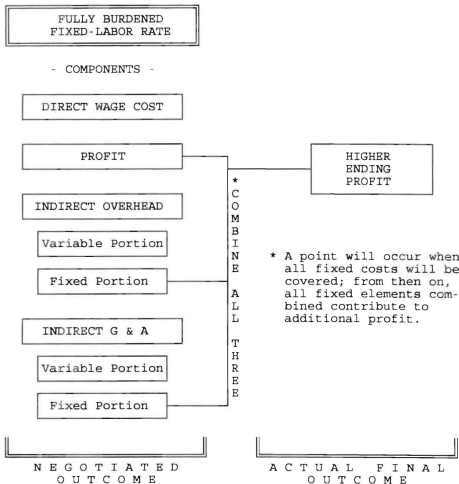


Figure 6. Effect of Overabsorbed Overhead

Source: Developed by Researcher

As illustrated in Figure 6, an additional profit incentive is created as labor quantity increases above the negotiated amount and beyond the point where fixed costs are covered. This creates an even stronger incentive, than illustrated in Figure 5, for the contractor to expend additional hours to earn additional profit.

The overabsorbed overhead phenomena is exacerbated when the ceiling price is increased. When the ceiling price increases, but the fixed-labor rate remains unchanged, the contractor will recover more overhead costs than warranted because the contract period remains unchanged and amount of actual overhead incurred does not increase in proportion to increases in the ceiling price. Thus the contractor realizes additional profit. [Ref. 3:p.21]

Although the results of the first two characteristics are similar to the results of the illegal Cost-Plus-Percentage-of-Cost contracts, the Comptroller General has upheld the legality of T & M contracts as long as no other contract type is suitable (and documented with a D & F) and a dollar ceiling is fixed in advance [Ref. 25:p.264].

3. Simplicity of T & M Contract Encourages Proliferation

Incorporating a T & M pricing mechanism into an IDTC is a very simplistic means of obtaining needed supplies or services since there are only four primary elements to ascertain up-front to negotiate the contract: anticipated

labor categories required for future needs; fully burdened fixed-labor rates for the various labor categories; an estimated cost of materials; and a ceiling price. Once the D & F is completed and the initial IDTC is in place, delivery orders can be quickly prepared by requiring activities to meet a multitude of possible needs, as outlined in Chapter III. This simplicity however, can be a virtue or a vice depending on where you sit.

From the Government's perspective, this simplicity creates several advantages to using T & M contracts which, in the researcher's opinion, contribute to increased T & M contract use and corresponding difficulties. The features which highlight the T & M contract's simplicity follow:

a. Ease of Award

Requiring activities prize T & M IDTCs since Procurement Administrative Lead Time (PALT) is less, allowing for work to get started sooner [Ref. 26]. Because the labor rate is fixed and negotiated in advance, the only real negotiating point for delivery orders is the labor mix (e.g. the type(s) of technician required) and the estimated number of hours and materials to establish a ceiling price. Additionally, DCAA involvement is not necessary for awarding delivery orders against the IDTC. [Ref. 26]

b. Ease of Budgeting

The T & M contract also allows for more simplified budgeting for requiring activities [Ref. 26]. Unlike a cost

reimbursable contract, but similar to a fixed-price contract, the fixed-labor rates and ceiling price allow the actual costs of the Government requirement to be known up-front (unless the ceiling price is increased). On the other hand, the final costs in a cost reimbursable contract may not be known with certainty for months after the work is complete, making budgeting extremely difficult. This feature became especially beneficial after September 30, 1993, when the successor "M" account was abolished by Public Law 101-510. After this date, any over-obligations from previous years will now come out of current period funding, making it extremely important to know the exact costs of contracts as early as possible. [Ref. 24:p.A-14]

Awarding a T & M contract at the end of the fiscal year, rather than a cost reimbursable contract which takes longer to award, can also help to quickly obligate funds to meet obligation goals. Finally, the ability to incrementally fund a T & M contract (unlike a fixed-price contract) provides flexibility to get the contractor started on the requirement while waiting for additional funds. [Ref. 26]

c. Fewer Modifications

The Administrative Contracting Officer (ACO) also appreciates the T & M contract since fewer modifications often result [Ref. 6:p.73]. A contractor is likely to request numerous modifications on a fixed-price contract as difficulties come up to reduce his risk, since each additional

dollar in costs represents a corresponding dollar loss in profits. The contractor is less likely to request modifications as unplanned events are encountered under a T & M contract because he is reimbursed for his additional hours and materials until the ceiling price is reached.

[Ref. 26]

4. Leverage Effect of a Ceiling Price

In both term and completion type contracts, a Limitation of Cost clause can operate to relieve the contractor from its full burden of performance [Ref. 6:p.69]. A Limitation of Cost clause is required in fully-funded cost reimbursement contracts, except those involving facilities [Ref. 5:part 52.232-20]. Under this clause, the Government is not obligated to reimburse the contractor in excess of the estimated cost set forth in the contract and conversely, the contractor is not obligated to continue performance under the contract or to incur costs in excess of the estimated costs set forth in the schedule, unless and until the contracting officer has notified the contractor in writing that the ceiling price has been increased [Ref.5:part 52.232-20]. The simplicity in theory of the Limitation of Cost clause however, often gives way to great difficulty during contract performance since partially completed work can be used as leverage to compel the Government to provide additional funding for completion of the requirement. Furthermore, this

underlying concept is also inherent when applying ceiling prices in T & M contracts.

Although the FAR provision and clause matrix does not prescribe the use of the Limitation of Cost clause in T & M contracts, the adverse leverage effects of this clause are also intrinsic in the required ceiling price of T & M contracts [Ref. 5:subpart 52.3]. The required ceiling price can act to provide leverage to the contractor if the ceiling price is reached before the work is complete and the ceiling price is not viewed as "binding" [Ref. 26]. For example, in the case of maintenance or repair work when the equipment is disassembled and the ceiling price has been reached, the Government may be compelled to increase the ceiling price in order to complete the work and return the equipment to operational status. Although the Government could potentially award a new contract to a different contractor to complete the repairs, time constraints generally necessitate a quick modification on the original contract to merely increase the ceiling price rather than take the additional time to initiate a reprocurement or resort to potential litigation in enforcing the ceiling price as binding. [Ref. 26]

It should be pointed out however that, it is possible for the Government to overcome the necessity to fund overruns by including ceiling prices in the contract [Ref. 6:p.125]. Numerous problems in determining their legal effect may be encountered however. One major problem is determining whether

the ceiling operates to deny the contractor's right to stop work when the ceiling is reached (i.e. the binding ability of the ceiling). Another concerns the interrelationship of the ceiling with other contract provisions. [Ref. 6:p.125]

A precisely drafted ceiling will operate to both deprive the contractor of additional funding and require him to complete performance within the stipulated amount [Ref. 6:p.126]. In LSI Service Corp. v. United States (1970), the court found the inclusion of a separate cost limitation article (i.e. a ceiling price) in a contract converted what would have been a cost-plus contract into a limited price contract [Ref. 27]. In this case, the entire agreement was contained in a written contract headed "Cost Reimbursement Contract," which provided for an estimated cost of \$57,210 and a fixed fee of \$4,005. The two relevant articles of the contract are provided below.

Article 22: Article 22 stated if the contractor had reason to believe that the total cost of the contract would be substantially greater or less than the estimated cost, he would submit a written estimate to the contracting officer. Thereupon, the contracting officer would decide whether to allow any excess costs and then notify the contractor of that decision in writing. [Ref. 27]

The inclusion of such an article would normally make the contract a cost reimbursement contract, which by its nature does not specifically limit costs however, the contract also contained the following:

Article 17: Cost Limitation. Notwithstanding, the Terms and Conditions of Article 22 entitled "Limitation of Cost"

of the General Provisions, the contractor agrees to faithfully and diligently pursue and complete the work specified in this proposal SP 9-67-1A at a maximum total cost, including fee of \$61,215." [Ref. 27]

The Board of Contract Appeals and the Court held that Article 17 converted what would have been a cost-plus contract into a limited price contract, requiring the contractor to complete the contract at a total cost not to exceed \$61,215. Article 17 stated that notwithstanding the payment provisions of Article 22, the cost limit stated in Article 17 was to prevail. Even the heading of the contract is not sufficient to change the nature and legal import of the provisions of the contract itself. [Ref. 6:p.126]

The Court of Claims view however, is that such ceilings will be strictly construed against the Government, in the event of ambiguities in contract language (i.e. contra proferentum), making it essential for the Government to exercise careful draftsmanship in preparing such provisions [Ref. 28]. Because of this, it is highly recommended that contracting officers consult with their legal staffs prior to implementing potentially conflicting contract clauses and articles to discern if the ceiling price will be truly binding.

5. Material Reimbursed At Cost Creates No Incentive for Efficient Material Management

As stated in Chapter II, material is reimbursed at original cost plus appropriate material handling costs. The

fact the Government will reimburse the contractor for all material used creates no incentive for the contractor to seek economies or efficiencies in material management.

C. DIFFICULTIES ENCOUNTERED - PRE-AWARD

This section will present difficulties encountered with the use of T & M contracts during the pre-award phase while the next section will present post award difficulties. Although some of the difficulties may fall into the gray area between, or within both, pre and post award, every attempt has been made to present difficulties in their more common associated phase of award. Additionally, often what happens during pre-award will contribute to post award difficulties, further confusing the distinction. The net result however, will be to cover the full realm of potential difficulties, even if arguments could be made for placing them into different phases.

The data are gathered from a combination of personal interviews with various DOD contracting activities and a literature review. The literature review is primarily centered around three audit reports of T & M contracting activity under the Air Force Logistics Command during the 1980s and early 1990s.

The first is Auditor General of the Air Force, Audit Report 7076413, which reviewed 56 T & M contracts awarded between January 1982 and November 1987 [Ref. 21]. The second

is Auditor General of the Air Force, Follow-up Audit Report 9076415, which reviewed 18 contracts issued during the period October 1988 to October 1989 to ascertain compliance with the findings outlined in Audit Report 7076413 [Ref. 3]. The third is the Office of the DOD Inspector General, Audit Report 93-023 which responded to a request from the House Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, to investigate allegations of abuse on sole source contract F33600-86-D-0295 to install and maintain secure communications switches (Red Switches) for fiscal years 1985 through 1991 [Ref. 29].

The data in these audit reports are not considered to be unique to the Air Force. Instead, it is the researcher's conclusion, based on similar problems reported in personal interviews, that the difficulties encountered are representative of problems that could be encountered by any contracting activity. The remainder of this section will discuss the pre-award difficulties reported in the literature and personal interviews.

- 1. Award of T & M Contracts Despite Availability of Historical Cost Data for Award of Other Contract Types**

As stated in Chapter II, the FAR requires that once historical data are available, contracting officers should avoid continued use of T & M contracts and negotiate fixed price contracts since less uncertainty is present. This includes the initial award of T & M contracts as well as the

exercising of option years. In Audit Report 7076413, 11 (valued at \$14.1 million) of 56 T & M contracts were awarded as T & M contracts when available information indicated a fixed-price contract was more appropriate [Ref. 21:p.3]. Follow-up Audit Report 9076415, again revealed 13 (valued at \$217.2 million) of 18 (valued at \$251.4 million) contracts were awarded as T & M contracts when a firm fixed-price contractual action was more appropriate [Ref. 3:p.4]. The following are specific examples acquired from these two audit reports.

- Contract F33601-88-D-0003. This contract was a T & M IDTC contract for Select Technical Services for one base year and 4 option years. The contracting officer had awarded previous contracts to the same contractor in 1985 and 1986 for essentially the same type of engineering services. The statement of work included routine preventive maintenance tasks and required the contractor to keep a record of services performed and parts used. In total, the contracting officer had three years of historical data available to negotiate a fixed-price contract. Documentation in the contract file indicated the contracting officer awarded the contract as a T & M because the previous contracts were awarded that way.
- Contract F41608-87-D-0106. The contracting officer exercised the first year option on this T & M contract without evaluating the four years of historical cost performance data available. Additionally, the contractor had over 11 years of experience performing the same services at the same Government facility. Documentation in the contract file erroneously stated there was no previous procurement for the type of work specified under this contract.
- Contract F34601-88-D-0143. The contracting officer issued a delivery order as a T & M even though two previous orders were issued with identical statements of work over a two year period.

- Contract F41608-87-D-0001. The contracting officer awarded a T & M contract for repairing nuclear remote interface units, even though three previous T & M contracts had been awarded to the same contractor for the same requirements. Further, the contract file was not documented to explain why the historical data was not used.

2. Improper Evaluation of T & M Options

The FAR requires that contracting officers only exercise options after determining that it is the most advantageous method of fulfilling the Government need, and document the fact in the contract file [Ref. 5:part 17.207].

In 15 of the 18 T & M contracts reviewed in Audit Report 9076415, contracting officers took the path of least resistance and exercised options without performing analysis to determine whether exercising the option was the best method to meet the Government's needs, nor did they document their rationale in the contract file. Without this rationale, the option becomes, in essence, a follow-on sole source contract that may not provide the best price for the Government. In the auditor's opinion, the contractor is even less likely to control costs if the contracting officer routinely exercises annual options without any analysis to determine whether the option is the best approach. [Ref. 3:p. 16]

3. Determination and Findings (D & F) Not Prepared or Reviewed as Required

As stated in Chapter II, a D & F is required to justify the use of a T & M contract over a fixed-price

contract. Once approved by higher authority, it becomes a permanent part of the contract file.

A D & F was either not prepared, or not prepared properly, in all 24 problem T & M contracts cited in number one above. Additionally, no D & F was prepared for the T & M line items on the Red Switch contract audited in Audit Report 93-023. Thus, no justification was available to support why available historical data were not considered for award of a fixed-price contract. Contracting officers were reluctant to take additional time to review historical records and data because they had not established any systematic method to record and track cost data on previous contracts. Further, the audit reports found that management and supervisory personnel did not enforce the requirement that contracting officers evaluate prior historical data. [Ref. 3:p.4]

4. Improper Forwarding of T & M Contract Copies

The DFARS requires routing of a copy of T & M contracts to the Defense Contract Audit Agency (DCAA) headquarters and field audit offices, to ensure proper surveillance [Ref. 12:part 204.201e(i)(B)]. Audit Report 7076413 noted 41 of 56 T & M contracts were not sent to DCAA for surveillance [Ref. 21:p.3]. The reasons for not submitting the required copies included; being unaware of the routing requirement, reliance on someone else to forward the copies, and not seeing a need to forward a copy to DCAA.

5. Application of Improper Profit Percentages

The contract profit objective developed by the Government before negotiations is normally developed based on weighted guidelines [Ref. 12:part 215.9]. The DFARS guidelines allow contracting officers to increase or decrease the profit percentage (within prescribed ranges) depending on the degree of cost risk accepted by the contractor. Because the T & M contract has minimum contractor cost risk, it is to be considered as a Cost-Plus-Fixed-Fee (CPFF) contract for establishing a profit weight, which has a normal value of 0.5 percent and a designated range of 0 to 1 percent. [Ref. 12:part 215.971-3]

Audit Report 7076413 found 11 of 28 T & M contracts reviewed used overstated cost risk percentages to compute contractor profit in the pre-negotiation objective [Ref. 21:p.16]. This occurred because contracting officers were not adhering to the DFARS guidelines. Further, they did not document their rationale for the percentages used in the contract files, nor did supervisory officials challenge or question the propriety of the calculations.

6. Failure to Include Required Ceiling Price

As stated in Chapter II, a ceiling price is required on all T & M contracts to limit and safeguard the interests of the Government. Audit Report 93-023 stated the Red Switch contract did not include a ceiling price, which was partially

responsible for the growth in the contract price from an initial planned program cost and award of \$12.6 million in fiscal year 1986 to \$122.4 million through fiscal year 1991, an increase of 871 percent. [Ref. 29:p.7]

7. Improper Estimates on T & M ID-RC Contribute to Higher Contractor Overhead

This difficulty directly affects the contractor and indirectly affects the Government. As an example, the contractor may have initially bid a fixed-labor rate in good faith, based on a Government requirement estimate of 100,000 labor hours for a proposed T & M ID-RC. Downsizing however, may have reduced the Government's actual requirements to 10,000 hours. The contractor loses substantially because his fixed-labor rate bid estimate was based on spreading his overhead over ten times as many labor hours as the actual amount realized (i.e. he is paid a lower labor rate than his actual realized costs due to the higher overhead). The Government can also lose from a reduction in competition either from bankruptcies or from a general reluctance by contractors to enter into ID-RC type contracts. This simple example illustrates how an excessive Government requirement estimate severely diminishes the contractor's G & A and overhead base, potentially compelling the contractor to seek efficiencies that may not be in the best interests of the Government.

8. Unavailability of Lower Priced Labor Categories

A Government solicitation for an ID-RC will have estimates for the approximate number of hours required for each of the different labor categories. Situations were reported where, allegedly, the contractor knowingly bid lower hourly rates for labor categories with high estimated hour requirements and higher labor rates for labor categories with low estimated hour requirements in order to come in with the lowest overall bid and thereby win the contract. However, when the Government started issuing delivery orders against the IDTC, the lower priced labor categories were "not available" forcing the Government to use the higher priced labor categories. [Ref. 22]

9. Contractor Buy-ins

A "buy-in" is not unique to a T & M contract but is possible in any type of contract. A "buy-in" occurs in a T & M contract when one contractor intentionally bids a fixed-labor rate to the Government which does not include all of his costs of doing business, in order to win the contract over a competing bidder/offeror (i.e. unfairly eliminating competition). The two strongest indicators of a "buy-in" are when one contractor's bid or proposal is substantially lower than the next lowest competitor, or if a review of cost or pricing data reveals a proposal well below the contractor's actual costs. The danger of a "buy-in" occurs after award,

when the contractor relies on mendacious post award actions to "recoup" his loss. A "buy-in" could result in the contractor inflating his hours beyond what is actually necessary to complete the contract requirement or the contractor insisting on using labor categories with higher negotiated fixed-labor rates for contract performance. [Ref. 22]

D. DIFFICULTIES ENCOUNTERED - POST AWARD

This section will present difficulties encountered during the post award phase of T & M contracts. The majority of this information was obtained through personal interviews with various DOD contracting activities.

1. Incentive to Inflate Labor Hours

Whether the opportunity is exercised or not, the temptation is always present in a T & M contract for the contractor to use more hours than necessary to complete a task [Ref. 30:p.28]. This problem was universal among everyone interviewed with the difficulty decreasing directly with the level of competition present. The more competition present, the more likely the contractor was to be efficient in the performance of the T & M contract.

2. Ceiling Often Accomplishes Little on T & M Contracts

As stated earlier in Section B of this chapter, the ceiling price can operate to provide leverage to the contractor if the ceiling price is reached before the work is complete. Several personal interviews stated that buying

activities often feel compelled to take the path of least resistance, to meet mandatory schedules imposed on them, by executing quick modifications to increase the ceiling price, rather than take the added time to do reprocurments. The contractor's leverage is even greater under a sole source T & M contract due to the lack of competition.

3. Use of Lower Skilled Workers

The fixed-labor rate on a T & M contract is a composite rate made-up of low skilled workers (at a low wage rate) and high skilled workers (at a high wage rate). Because the contractor is reimbursed at a fixed-labor rate, there is no incentive for the contractor to send his most skilled personnel since their wages are likely to be close to the negotiated fixed-labor rate. The contractor will benefit in two ways by using lower skilled personnel. First, he will earn more profit because his actual labor costs will be less using the lower skilled/lower paid employees. Second, he will also benefit with increased profit if the lower skilled worker takes longer to complete the job than a higher skilled worker as illustrated in Figure 5.

4. Use of T & M Contract as Vehicle for Training New Personnel at Government's Expense

This problem is similar to the difficulty cited in number three above. Because the contractor is reimbursed a negotiated fixed-labor rate, it is to his advantage to take this opportunity to send new people or trainees to perform the

work since their wage rates are likely well below the negotiated fixed-labor rate, thereby increasing his realized profit. In addition to the benefits to the contractor cited above, the Government loses in two ways. First, the lower skilled trainees would likely also contribute to higher material scrap rates thereby increasing material costs under a T & M contract. Second, the Government is effectively subsidizing the contractor's training program by allowing trainees to "practice" on the Government contract.

5. Use of T & M Contract as Vehicle for Ordering Non-Related Equipment

This problem was not associated with contractor abuse but with abuse by the Government requiring activities themselves. The T & M contract line item for materials is sometimes used by the Government as an easier means of obtaining non-related equipment and materials than properly initiating a separate contracting action. This type of abuse is most prevalent in highly decentralized T & M IDTC contracts, where many separate activities have ordering authority under the IDTC. It is also more common when the statements of work are not specifically and clearly written. [Ref. 29:p.80]

The most notorious abuse noted was reported in Audit Report 93-023. Under the T & M contract under review for the installation of secure communications (Red Switch) equipment, the following types of non-related materials were obtained

under the category "miscellaneous installation parts and materials:" research and development; purchase of golf shirts; building of a kitchen and general's balcony; and purchase of computers and multiple copies of Wordperfect and Lotus software. [Ref. 29:p.39]

6. Problems Associated With Over-and-Above Concept

There were two primary problems reported when the Over-and-Above concept was used in a T & M contract; one noted by the Government and one noted by a contractor.

a. Incremental Funding to Obligate Funds

Unlike a fixed-price contract, the Government can incrementally fund a T & M contract [Ref. 26]. This is normally an advantage to the Government because it could allow a contractor to begin work on a requirement (e.g. a R & D effort) with the Government funding continuation efforts as funds become available. As one buying activity reported, it can also create problems if requiring activities use the open and inspect line item to "bank" excess funds at the end of the fiscal year to meet obligation goals. Although obligation goals may be met, it often creates unobligated balances in these contract line items if the funds are never actually used. [Ref. 31]

b. "Stop & Go" Aspects Delay Repairs

One contractor expressed displeasure with the "stop & go" aspects of the Over-and-Above concept because it

creates scheduling problems and increases the time to affect repairs [Ref. 23]. After the single negotiation of a normal cost reimbursement contract, the contractor is free to affect repairs with limited Government intervention. Under a T & M contract however, there are several negotiations, and hence, delays.

Under a T & M ID-RC there is one negotiation to determine labor categories, fixed-labor rates, a ceiling price, and an estimated total quantity of labor required upfront. Then, when a Government requirement randomly comes up, the contractor must negotiate again for the delivery order (although it's much quicker at this point) to determine the needed labor categories, estimated materials, and a ceiling price. This also pulls the contractor away from other work, creating scheduling problems. Further, when an Over-and-Above line item is in place, the contractor again must stop and wait for the Government to review, for "reasonableness," the list of additional repairs required and negotiate a new ceiling price before he is allowed to continue. In the contractor's opinion, the turn-on process for T & M contracts with Over-and-Above line items is slower and repairs take longer than under a cost reimbursement contract. [Ref. 23]

7. Lack of Performance Flexibility Due to Fixed-Labor Rates

In a T & M contract, unlike a cost reimbursement contract, there is no flexibility to change labor categories

during contract performance, without a modification, to meet the needs of the situation. This can cause delays when a needed labor category is not listed in the T & M contract, and partially completed and urgent work cannot be completed without executing a modification.

8. Disadvantage of Fixed Labor Rates During Periods of Inflation

As stated in the trend analysis section of Chapter III, the contractor stands to lose considerably from being locked into fixed-labor rates during periods of inflation, especially IDTC contracts with base-plus option years. This problem may manifest itself in the contractor building-in large profit contingencies at the outset into their negotiated fixed-labor rate. It may also partially explain the motivation behind other post award problems.

9. Lack of Resources for Adequate Surveillance

A few contract administration activities reported insufficient personnel resources to adequately monitor lower dollar value T & M contracts since they devoted the majority of their personnel to higher dollar value contracts. These contract administration activities felt that the aggregate effect of the potential abuses on lower dollar value T & M contracts was substantial and warranted closer monitoring if assets were available.

10. Growing Contractor's Personnel System Changes

A contractor is likely to change its personnel system as it grows, including pay structures and labor categories. This creates confusion for both the Government and the contractor when trying to pay invoices on T & M contracts with fixed labor rates and changing labor categories.

11. Labor Mischarges

This final difficulty is not unique to T & M contracts but is a potential problem in any cost reimbursement type of contract. Because the labor element of a T & M contract comprises such a large percentage of the total dollar value however, a discussion of the potential problems with labor mischarging is relevant.

The impact of labor mischarging is almost always far greater than the basic labor costs, since a single hour of mischarged labor may result in as much as three times the labor-hour rate due to indirect cost allowances which are added based on that hour [Ref. 32:p.10]. Labor costs are highly susceptible to mischarging because employees' labor can be readily shifted to any contract with the stroke of a pen on their time cards. The following are examples of difficulties with labor mischarging as gathered from the DOD Office of the Inspector General: [Ref. 32:p.10-12]

a. Transfer of Labor Cost

This mischarge is often made to eliminate a loss on a fixed-price contract by making journal entries to shift the loss from the fixed-price contract to the T & M contract. This problem is more prevalent with contractors engaged in multiple, simultaneous Government contracts.

b. Time and Charges Do Not Agree with Contractor Billing to the Government

This labor mischarge is easily detected by simply totaling the hours expended on the T & M contract and comparing them to the hours billed. The primary source documents for review are employee time cards, rather than computerized labor distributions, since it is far easier to falsify a computer printout than to corrupt the entire work force to falsify time cards.

c. Original Time Cards are Destroyed or Hidden

This is often a strong indicator of impropriety. Duplicate time cards should always be reviewed with suspicion.

d. Changes Made to Individual Time Cards

This mischarging has been encountered by DCAA in reviewing the original contract charge numbers on employee time cards [Ref. 32:p.12]. Each employee time card should have a cross-reference to a specific contract for Government contracts. Although a few random changes are not indicative of mischarging, a preponderance of corrections, errors, line-outs, etc., could indicate mischarging.

e. Time Card Changes Made by Supervisors

Ideally, time cards should be maintained by individual employees and reviewed/signed by supervisors. Timekeeping systems which have supervisors posting labor charges should be reviewed with skepticism.

E. ANALYSIS OF T & M CONTRACT DIFFICULTIES

The analysis section of this chapter will be broken down into three areas. First, the characteristics of T & M contracts which lead to difficulties will be analyzed. This is followed by separate analyses of pre-award and post award problems. Tables VI through VIII are provided to consolidate the findings previously presented and to serve as a ready reference for referral during the analysis.

1. Analysis of T & M Characteristics Which Lead to Difficulties

As stated in Chapter II, the traditional view of T & M contracts is that there is little or no incentive for the contractor to control labor and material costs since additional hours spent on the contract result in increased profits to the contractor. This view is indeed supported directly in Table VI by characteristics ONE, TWO, and FIVE and indirectly by FOUR.

Characteristics ONE and TWO clearly show a strong incentive for the contractor not to control labor costs since his profit clearly increases as the labor quantity increases

on the T & M contract. Although characteristic FIVE shows no incentive to increase material costs, it does not provide any incentive to decrease material costs either, or for the judicious procurement and use of materials. These findings provide further evidence of the contractor's lack of incentive to control labor costs up to the ceiling.

TABLE VI

**SUMMARY OF FINDINGS OF CHARACTERISTICS
WHICH LEAD TO DIFFICULTIES**

CHARACTERISTICS WHICH LEAD TO DIFFICULTIES	
1	Fixed Profit Percentage Built into Fixed-Labor Rate Creates Opportunity for Increased Costs Leading to Increased Profits
2	Fixed Elements of Overhead and G & A Built into Fixed-Labor Rate Creates Opportunity for Higher Realized Final Profit Percentage
3	Simplicity of T & M Contract Encourages Proliferation
4	Leverage Effect of a Ceiling Price
5	Material Reimbursed At Cost Creates No Incentive for Efficient Material Management

Source: Prepared by Researcher

Characteristic FOUR indirectly supports the traditional view. Although the contractor may not intentionally use partially-completed work as leverage to increase the ceiling price, the data show simplicity often

does compel the Government to simply increase the ceiling price with a modification, rather than initiate a time consuming repurchase (or even litigation to confirm the ceiling is binding) to finish the work. The knowledge that the contractor may have an easier time of getting the ceiling increased, provides little incentive for him to control labor and prevent reaching the ceiling in the first place.

Characteristic THREE was unexpected at the outset of the research and during the initial literature review but became more pronounced during personal interviews. The early literature review of governing T & M contract directives and regulations did not allude to the simplicity aspect of the T & M contracting method. The first indication of simplicity was noted in the audit reports reviewed. Later, during personal interviews, respondents consistently reported the administrative and budgeting virtues of this pricing mechanism, particularly when combined with the IDTC.

In the researcher's opinion, simplicity is at least one of the causes for T & M contract proliferation since busy contracting officers will naturally gravitate toward methods which make their jobs easier. Interestingly, upper echelons of the Government discourage T & M contract use however, the closer one gets to where the contracting work is actually performed, the more the Government likes this contracting method due to its simplicity. Simplicity, in and of itself is not bad, but in fact, is needed in Government contracting to

help streamline the acquisition process. Unfortunately, other contracting requirements should not come at the detriment of simplicity. Any characteristics which contribute to simplicity without increasing either the Government's or the contractor's share of risk should be exploited, while mitigating those characteristics which contribute to risk.

The existing T & M contract regulations are simple and in place to reduce the risk to the Government if they are followed. Adherence to existing regulations would serve to mitigate the potential negative effects of characteristics ONE, TWO, and FIVE. A host of problems can occur however, when the regulations are not followed. These difficulties are manifested in the analysis of the pre and post award problems which follow.

2. Analysis of Pre-Award Problems

The virtue of simplicity in T & M contracting is misused when regulations are not followed by the Government. The first seven of the nine pre-award problems listed in Table VII are attributable to errors made by the Government and not contractors. This is a significant finding because it indicates the Government can control a significant amount of T & M contract risk because the locus of the majority of the problems during pre-award resides with the Government. Of these seven problems, problems ONE through SIX are directly

attributable to contracting activity violations of existing regulations outlined in the FAR.

TABLE VII

**SUMMARY OF FINDINGS OF PROBLEMS
NOTED DURING PRE-AWARD PHASE**

PROBLEMS NOTED DURING PRE-AWARD PHASE	
1	Award of T & M Contract Despite Availability of Historical Data for FFP Contracts
2	Improper Evaluation of T & M Contract Options
3	D & F Not Prepared or Not Prepared Properly
4	Improper Forwarding of T & M Contract Copies
5	Application of Improper Profit Percentages
6	Failure to Include Required Ceiling Price
7	Improper Estimates on ID-RC Contribute to Higher Contractor Overhead
8	Unavailability of Lower Priced Labor Categories
9	Contractor "Buy-ins"

Source: Prepared by Researcher

In each personal interview conducted, the respondents clearly articulated the regulations. They were aware of the requirements for reviewing historical data, properly evaluating options, preparing Determinations and Findings, proper routing, applying proper profit percentages, and including ceiling prices. The three audit reports however,

suggest that these regulations and requirements are not always followed. It is uncertain why there is a difference between what is clearly known by contracting officers and what is actually performed. The answer may lie in the regulations themselves being unrealistic or unnecessary to adequately mitigate the potential negative effects of T & M contracts. This is unlikely though, since following the regulations to the letter would eliminate six of the nine pre-award problems listed in Table VII. Additionally, an important observation was made in the personal interviews which supports the current level of regulations. All contracting offices contacted, including the one civilian contractor, believed that existing regulations were adequate to control T & M contracts. Not one respondent recommended reducing the current level of regulations. This seems to indicate that current regulations are adequate if followed.

One may then speculate and assume that time constraints are the motivation for "bending the rules." Time and Materials contracts may be the path of least resistance for busy contracting officers under pressure to meet mandatory schedules imposed on them. For example, it is far easier and quicker to exercise a T & M IDTC option, or to award a new T & M contract, than to take the added time to properly review historical cost information for award of a FFP contract or to resolicit. It is even quicker to award if other regulations are not followed (e.g. not performing a D & F or establishing

a ceiling price). Ideally then, if this is the case, supervisors must be aware of the problem and balance work loads, etc., while simultaneously ensuring compliance with regulations.

Problems EIGHT and NINE are not shortcomings of Government contracting activities but of the contractors themselves. Only a contractor with a short term outlook or one who feels his actions will not be detected would likely take the risk of lost future business or goodwill. Although these problems can result in losses to the Government, most contractors likely understand the long term implications of these actions on their reputation and opportunity for any future Government awards. Accordingly, most contractors will not likely take the risk, particularly if the Government remains vigilant in its monitoring.

It goes without saying that in a lengthy contracting process, the events that occur early have an effect on later events. Specifically, mistakes made in the pre-award phase will often be manifested in the post award phase. There is a dichotomy in having an easy award up-front only to have more difficulties later during post award. As indicated earlier, the significance of the Government's role in the level of problems encountered during pre-award demonstrates a key area where the Government should focus to mitigate potential post award problems with T & M contracts. The final analysis section will examine the post award difficulties.

3. Analysis of Post Award Problems

Whereas the majority of the pre-award problems were the responsibility of the Government, the reverse is true for the post award problems summarized in Table VIII. Problems ONE through FOUR, and ELEVEN are clearly the responsibility of the contractor. Conversely, only problem FIVE can be attributed to the Government. The remaining problems are either circumstantial, with no fault associated to either party (problems NINE and TEN), or inherent to the T & M contract and subject to interpretation (problems SIX through EIGHT).

Although at first glance, problems ONE through FOUR, and ELEVEN would appear to be glaring violations, one must ask what the motivation might be to engage in these activities, beyond the apparent motivation to maximize profits. The contractor may have initially acted in good faith to provide a realistic fixed-labor rate estimate, but any one of a number of factors outside of the contractor's control could have occurred to put the contractor into a loss situation. The two most dominant factors include an unexpected rise in the inflation rate, and/or diminishing defense business which increases overhead rates. Either one of these factors could eliminate any profit originally built into the fixed-labor rate estimate, and even result in a loss.

Problem FIVE is indicative of a lack of clarity in the statements of work and/or improper supervision. A clear and

definitive statement of work will prevent unauthorized materials procurement by the Government.

TABLE VIII

**SUMMARY OF FINDINGS OF PROBLEMS
NOTED DURING POST AWARD PHASE**

PROBLEMS NOTED DURING POST AWARD PHASE	
1	Incentive to Inflate Labor Hours
2	Ceiling Price Often Accomplishes Little on T & M Contract
3	Use of Lower Skilled Workers
4	Use of T & M Contract as Vehicle for Training New Personnel at Government Expense
5	Use of T & M Contract as Vehicle for Ordering Non-Related Equipment
6	Problems With Over-and-Above Concept
7	Lack of Performance Flexibility Due to Fixed-Labor Rates
8	Disadvantage of Fixed-Labor Rates During Periods of Inflation
9	Lack of Resources for Adequate Surveillance
10	Growing Contractor's Personnel System Changes
11	Time Card Fraud

Source: Prepared by Researcher

The "stop and go" aspects of problem SIX are a source of concern for contractors. With the contractor preference of

starting and completing a requirement with minimal delay, interruptions and schedule changes, this may be an area where the Government can make modest changes which can benefit both parties.

Problem SEVEN is considered very minor in nature. All that is necessary is a contract modification to add any needed labor categories to the T & M contract. Although the modification is not difficult, it could be avoided altogether by ensuring, up-front, that all contingent labor categories are included in the initial contract.

As stated previously, problem EIGHT may actually be an important influence or catalyst for problems ONE through FOUR, and ELEVEN. The ability to mitigate the effects of inflation on a T & M contract could, therefore, be a key motivator to encourage a contractor to perform in the most efficient manner possible. For this reason, an economic price adjustment feature may be warranted. This and other potential motivators to encourage efficient performance of T & M contracts will be further examined in the remaining chapters.

F. SUMMARY

Chapter IV has presented a comprehensive view of T & M contract difficulties including an analysis of the characteristics and problems associated with their use. The chapter began with an examination of the general characteristics of T & M contracts which lead to difficulties.

This was followed by separate discussions of the problems encountered during both the pre and post award phases of the T & M contract. Finally, an analysis of the problems was conducted to help understand the probable reasons for the difficulties and to serve as a basis for developing a management guide, as a reference during pre and post award, to assist in mitigating these potential problems.

Chapters V and VI will use the information from this and the preceding chapters to propose management guides for proper forming and monitoring of T & M contracts during pre and post award, respectively.

V. TIME AND MATERIALS CONTRACT PRE-AWARD CONTROLS

A. INTRODUCTION

Chapter IV discussed a myriad of potential problems associated with T & M contracts during both the pre-award and post award phases of the contract. Chapter V will lead off where the previous chapter ended, by examining the controls which should be implemented to mitigate those pre-award problems highlighted in Chapter IV. The controls advocated can serve as a management guide to reference during the pre-award phase for properly structuring and initiating T & M contracts to mitigate potential problems.

This chapter will also include an examination and analysis of possible incentives/controls which might be built into the T & M contract to incentivize both the Government and the contractor to perform the contract as efficiently as possible. The incentives proposed are primarily the result of closely analyzing the characteristics which contribute to difficulties presented in Table VI.

B. CONTROLS TO PREVENT PRE-AWARD DIFFICULTIES

This section will refer to the pre-award difficulties presented in Chapter IV. The reader will find it useful to periodically refer to Table VII since the problems summarized in it will be referred to, by number, extensively in this

analysis. The objective of this section is to provide a management guide to consult during pre-award to mitigate those pre-award difficulties presented in Chapter IV.

The supervisor's role in correcting many of these problems cannot be overemphasized. The purpose of Chapter IV was to provide awareness to supervisors of these problems. With awareness covered, Chapter V can be used as a management guide to help mitigate these problems. A recurring theme throughout this section is that contracting officers cannot be afraid to make good business decisions as long as their rationale is documented in the contract file. The supervisor's role is to not only ensure that documentation exists, but also to serve as quality control for efficient contract administration and performance.

A significant finding pointed out in Chapter IV revealed that the Government, and not the contractor, was responsible for seven of the nine pre-award difficulties. Six of these difficulties were associated with violation of existing regulations. This can be viewed optimistically though, since if the Government is responsible for the difficulties, it is in a better position to correct them than if the problems were caused by contractors. The remainder of this section will propose controls to the difficulties summarized in Table VII.

1. Problem ONE - Award of T & M Contract Despite Availability of Historical Data for FFP Contracts

The FAR requires review of any and all historical data before awarding a T & M contract [Ref. 5:part 16.103(c)]. This requirement exists to ensure the contracting officer uses existing data to lessen the uncertainty of the requirement in order to award a FFP contract. As a bare minimum, the contracting officer must take the added time to manually review, what are normally, hard-copy files for similar type contracting actions. This process is cumbersome and takes time.

To fully meet this requirement in the most effortless manner, the contracting officer should have a systematic and uncomplicated means of recording and storing all prior contract data and then a means to quickly retrieve it for future use. The recording and storing of pertinent contract data is already accomplished through the required individual contract file for each contracting action. It is the retrieval criteria however, which can prevent or hinder rapid access to pertinent historical data.

Retrieval of data could be simplified through the use of some type of indexable, computerized data base. Indexing is necessary to allow rapid retrieval of contract data. One of the more common means of retrieving is by a key word/phrase search. For example, a key word/phrase search could provide either: 1) specific contract data from past related

contract actions, or more simply, 2) a file cross-reference number to allow for rapid manual search of existing contract files for related cost information.

The first option, a computer data base containing all pricing data, is likely not feasible for most contracting activities due to resource constraints. The time necessary to input all the various metrics of each past contracting action would be great. Further, the sporadic, non-repetitive, and uncertain nature of T & M contracts makes the actual determination, of the pertinent data to input, extremely difficult.

One contracting activity contacted however, did report some attempt at standardizing certain labor jobs to serve as a repository of historical data. For example, a time standard exists for laying 1000 feet of telephone cable in a three foot trench in semi-rocky ground, attaching cable ends, checking continuity of the circuit, and refilling the trench. The difficulty of determining the relevant data items as well as the time required to input all these parameters is evident in this simple example. [Ref. 33]

The second option of forming an indexable, user-friendly, cross-reference data base is more feasible and would be very helpful to a busy contracting officer attempting to quickly locate and review related historical data. In this option, the researcher proposes a much more abbreviated data base. The following are suggested data fields to consider in

the data base: contract type; contract number; principal product or service; Federal Supply Classification (FSC) group and class or Service Code; and a short description of the requirement. The actual data fields could be modified to reflect the needs of the contracting office. A key word dictionary should also be developed to provide discipline to ensure basic key descriptive words are used throughout, to enable successful searches.

Through a key word/phrase search such as, "pump, reciprocating" or "overhaul," a contracting officer could quickly obtain the contract numbers of potential similar contracts. The contract number would be the cross-reference number to allow pulling the related contract file(s) (which are already required for each contracting action) for review. Initially, some time would be required to go through past contract files to construct a data base. Once complete however, systematic update of the data base, as contracts are awarded, would be relatively effortless.

It may also be cost effective to issue a contract for development of a computerized historical cost tracking system, if in-house assets are insufficient to develop a user friendly system. The expertise of an outside contractor could be solicited, through a broad functional specification of what the Government would want the software to do, to encourage maximum creativity. Contracting headquarter's commands should

consider developing these systems if a large number of T & M contracts are issued by their reporting activities.

2. Problem TWO - Improper Evaluation of T & M Contract Options

An option provision is a unilateral right in a contract whereby, for a specified period of time, the Government may elect to purchase additional supplies or services called for by the contract, or extend the term of the contract. The FAR allows the Government to exercise options only when it is the most advantageous method of fulfilling the Government's need, price and other factors considered [Ref. 5: part 17.207(c)(3)].

Time and Material IDTCs often have a base year and one or more option years. The base year often provides excellent historical data for consideration of a fixed-price contract during the option years. In all cases, the base year must be examined closely to attempt award of a FFP contract over a T & M contract whenever possible. There should be few cases of awarding options as T & M contracts due to the likely availability of historical data from the base year.

In those few cases where historical data are still insufficient, the FAR provides great latitude for contracting officers to exercise good business judgment for exercising options, provided their analysis and rationale is justified in the contract file. Underlying this business judgment must be the objective of full and open competition, whenever possible,

to provide reasonable assurance of a fair and reasonable price. Without proper analysis and corresponding documentation in the contract file, there is no assurance of a fair and reasonable price.

It is likely, the predominant reason contracting officers improperly exercise options is a combination of the ease of exercising options, neglect, and inadequate supervision. As in the requirement for reviewing historical data, proper evaluation of options takes time which is at a premium for busy contracting officers. Personal interviews confirmed that exercising options was easier and quicker than resoliciting, particularly if proper analysis is not conducted.

In addition to reviewing historical data from the base year, the contracting officer should seek the opinion of the Contracting Officer's Technical Representative (COTR) before making his final decision to exercise an option. The COTR's recommendation should be given considerable weight considering his proximity to the contractor and familiarity with the events of the base year.

Supervisors must ensure adequate procedures are in place to meet FAR requirements. Performance Management Review (PMR) audits should not be relied upon to "catch" the problem. Because busy contracting officers sometimes take the path of least resistance, supervisors must be vigilant in reviewing

contract files to ensure evidence of analysis of options supports the decision to exercise the option.

3. Problem THREE - D & F Not Prepared or Not Prepared Properly

This problem is a direct outcome of the fundamental problem cited in number one above. In the researcher's judgment, it is very difficult to prepare a D & F justifying use of a T & M contract if no review of historical or market data is conducted, since this review is essential to confirm that the uncertainty is too great to award a FFP contract.

If the contracting officer had an easier means of reviewing historical data, he/she would be more inclined to do the review and thus, have an accurate basis to support a D & F. This further supports the recommendation of developing and implementing an indexable, computerized, cross-reference data base for rapid retrieval of historical data.

As in number two above, supervisors are the primary checkpoint to ensure FAR requirements are met. Their attentiveness is necessary to mitigate this problem.

4. Problem FOUR - Improper Forwarding of T & M Contract Copies

Since awareness was one of the factors cited for not adhering to this requirement, the problem is easily eliminated by reviewing and following DFARS guidance on the routing of T & M contract copies. Supervisors must also establish

internal procedures to eliminate confusion on exactly who, within the contracting office, is responsible for the routing.

5. Problem FIVE - Application of Improper Profit Percentages

The essence of this problem is that contracting officers did not use DFARS guidance to determine the pre-negotiation profit objective or document their rationale in the contract file, nor did supervisors challenge the propriety of the calculations. One can surmise that the cause of this problem is a lack of understanding, by contracting officers, of the relationship between the pre-negotiation profit objective and the *final* realized profit.

The DFARS is clear on the range of profit on a T & M contract for the pre-negotiation profit objective. It must be emphasized that this is only a Government objective determined before commencing negotiations. Neither the contractor nor the Government is obligated to end negotiations at a profit less than or equal to the objective. Because profit is a motivator of efficient contractor performance, negotiations aimed at merely reducing prices by reducing profit are not in the best interest of the Government. In exercising his/her best business judgment, there is nothing wrong if the negotiator ultimately decides on a higher profit percentage than his/her original objective, provided their rationale is documented in the contract file.

Supervisors are important in mitigating this problem since their reaction to negotiation outcomes can have a significant impact on the original negotiation position of the negotiator. A supervisor who fixates only on the difference between the pre and post negotiation profit objectives could influence a negotiator to establish a higher pre-negotiation profit objective in order to reduce the potential difference between the pre and post negotiation percentages. Instead, the supervisor should balance the overall effect of the final negotiated profit percentage against the totality of tradeoffs made during negotiations. Additionally, supervisors should review the pre-negotiation profit percentages before negotiations to ensure calculations comply with DFARS guidance.

6. Problem SIX - Failure to Include Required Ceiling Price

In the researcher's opinion, one of the Government's best assurances to prevent unplanned cost growth lies in establishing a well-conceived binding ceiling price. As stated in Chapter IV, a precisely drafted ceiling can operate to deny the contractor of additional funding beyond the ceiling while requiring him to complete performance within the stipulated amount. However, since the courts have construed poorly written or conflicting contract clauses and articles against the drafter (i.e. the Government), it is extremely important for contracting officers to have their legal staffs

review potentially conflicting clauses and ceiling articles to ensure the enforceability of a binding ceiling.

Reactions were mixed during interviews when asked how often the ceiling price was exceeded. A large number of respondents felt compelled to increase the ceiling price because the contractor complained of being unable to complete the contract because the ceiling was too low for the level of uncertainty. Unless it is absolutely clear to the contractor that the ceiling is binding, the Government may continue to see some contractors requesting increases to the ceiling. For this reason, any contracting activity engaged in T & M contracts should make drafting clear and binding ceilings a matter of priority. Likewise, once the ceilings truly are binding, much more consideration and time must go into negotiating them to prevent undue risk on either party.

On the surface, the benefit of a binding ceiling seems obvious. The contractor would be unable to increase labor hours (and thereby profit) beyond the ceiling. Unfortunately though, implementing a binding ceiling which provides a contractor low or no profit may not provide proper motivation for optimum contract performance. An effective ceiling price would have to consider the degree of uncertainty and risk. The use of ceilings with potential incentives and controls will be further discussed later in the incentives section of this chapter.

**7. Problem SEVEN - Improper Estimates on ID-RCs
Contribute to Higher Contractor Overhead**

As stated in Chapter IV, improper estimates on T & M ID-RCs directly affect the contractor through higher overhead rates, which are not reimbursed by the Government due to the negotiated fixed-labor rate nature of the T & M contract. It also indirectly affects the Government through a reluctance of contractors to enter into ID-RCs. The primary contributors to this problem are the fact that an ID-RC does not require the Government to indicate a minimum order quantity in the contract nor is the Government obligated to meet their estimates. Under FAR guidelines, all that is necessary is for the Government to provide a realistic estimated total quantity, which may or may not be realized. Without a minimum quantity, the contractor could theoretically receive no orders under the contract, drastically affecting his overhead.

The outcome of receiving minimal or no delivery orders can be detrimental. One contracting activity contacted noted cases where contractors resorted to litigation in order to either get out of multiple year T & M ID-RC contracts, or be allowed to readjust their fixed-labor rate, due to drastic changes in overhead caused by inaccurate Government estimates [Ref. 34].

Since the FAR does not specifically prohibit the possibility of incorporating a minimum quantity into an ID-RC,

consideration may be appropriate to place a minimum quantity in the contract in order to encourage contractors to accept this arrangement, particularly in T & M ID-RCs with options extending the ordering period. The minimum quantity could be the contractor's basis in establishing "worst case" overhead rates and corresponding fixed-labor rates for their negotiation position.

8. Problem EIGHT - Unavailability of Lower Priced Labor Categories

This problem could be alleviated if the Government required that the contractor's proposal contain very specific job descriptions describing the different labor categories proposed under the IDTC. The Government's statements of work (SOW) for each delivery order issued under the IDTC must then ensure that if a certain labor category is desired, the SOW must be written to support only that labor category. This specificity would prevent the contractor from substituting in higher priced labor categories.

A "creative" breakdown of labor categories might also show that the abilities of a lower priced labor category may be encompassed within the abilities of a higher priced labor category thereby allowing a contractor to substitute in the higher priced labor category under the guise that the lower priced labor category is unavailable. In this situation, the Government is compelled into not only the measures outlined above but should consider the following two other controls.

First, a statement could be placed in the delivery order that only the lower priced labor category is acceptable for the requirement. Second, a provision could also be placed in the original IDTC which states in essence, "in situations where multiple labor categories could perform the Government requirement, the Government will reimburse at the rate of the lower priced labor category, regardless of how the contractor assigns his labor force," or words to that effect.

9. Problem NINE - Contractor Buy-ins

The contracting officer's best protection against a buy-in is to be alert during the bid or proposal evaluation for the two key indicators noted in Chapter IV, and not award to that contractor. If the award is already made however, the contracting officer must take appropriate action to ensure buying-in losses are not recovered by the contractor through unnecessary or excessively priced change orders [Ref. 5:part 3.501]. The implementation of a well-conceived binding ceiling price is an excellent means of preventing unnecessary cost growth. If the contracting officer suspects a buy-in, he/she should also alert the Administrative Contracting Officer (ACO), the Contracting Officer's Technical Representative (COTR), and the requiring activity to be extra vigilant before initiating or allowing any change orders.

C. PROPOSED INCENTIVES TO IMPLEMENT

The controls outlined above will help to alleviate the difficulties presented in Chapter IV however, the use of other incentives and/or controls might also prevent these problems from occurring in the first place. This section will explore possible incentives.

As stated in Chapter II, the traditional view of T & M contract incentives is that the prime incentive is for the contractor to increase labor hours in order to increase profit. Chapter III also pointed out that while Government use of T & M contracts appears to be increasing, the willingness of contractors to enter into T & M contracts is decreasing, primarily due to uncertainties in inflation and its adverse affect on fixed-labor rates. Chapter IV suggested that one of the primary reasons contracting activities appreciated T & M contracts was due to their simplicity however, a large amount of this simplicity was due to disregard of existing regulations in order to expedite award of the contract.

When attempting to propose possible incentives or restructuring of the T & M contract, there must be a balance between the additional administrative effort required and the benefit received. Many factors must be examined before deciding on the use of incentives or controls on a T & M contract including: contract duration; dollar value;

availability of personnel assets to administer; market uncertainty; level of competition; expediency to award; etc.

In some cases, it may be more cost effective merely to increase surveillance than to take additional time formulating incentives or controls. In the experience of one contracting activity who undertook a \$60 million CPAF contract, they stated, "the additional administration was a nightmare... imagine the problem on a smaller value T & M contract."

[Ref. 35] Another contracting activity questioned incentivizing a T & M contract (unless a truly unique incentive could be developed) when other forms of incentive contracts already exist [Ref. 36].

When attempting to propose possible incentives or restructuring of the T & M contract to mitigate problems, the overall objective should be to maximize those characteristics that do not increase risk to either party while minimizing the administrative effort to implement and administer the controls. More specifically, three fundamental goals must underlie any consideration to changing the existing T & M contract. These goals are:

- 1) Simplicity in Award and Surveillance
- 2) Ease of Budgeting
- 3) Reduced Risk Compared to Traditional T & M Contract

Several alternatives were considered and dismissed because they did not satisfy the three above goals. Among those considered and dismissed included:

- **Use of Two Contractors for Repair or Overhaul Work.** Under this concept, one contractor would do the troubleshooting and another contractor would complete the repairs. The concept was discarded for two reasons. First, more administration is required during pre-award since two contractors are involved, thereby violating the goal of simplicity. Second, the Government would have to put an implied warranty on the troubleshooting efforts of the first contractor in order for the second contractor to accept the troubleshooting report.
- **Use of an Award Fee Concept.** This possibility was broached with several contracting activities with predominantly negative responses. The primary argument was increased administration, which violates the goal of simplicity. Other arguments included: difficulty in budgeting; subjectivity not favored by contractors; availability of other award fee contract types; risk not fundamentally less than a T & M contract with a ceiling price; and that since the nature of the T & M contract is that the extent and duration of the effort is unknown, there should not be any tying of the award to finishing the contract early. This would create an incentive to inflate the initial estimate to make it easier to finish early. Although other factors besides delivery could be the basis for the award, more time would be required to determine and then negotiate them.
- **Use of an Incentive Fee Concept.** The use of an incentive fee was viewed essentially the same as an award fee. Again, the primary arguments were increased administration, difficulty in budgeting, and availability of other incentive fee contract types. Although subjectivity would be less, negotiating a Range of Incentive Effectiveness would also be more difficult than negotiating a ceiling price.

Although the above possibilities were dismissed, two other proposals are viable. The first is incorporating an Economic Price Adjustment (EPA) into the T & M contract. The second is

to incorporate a fixed fee concept. The remainder of this section will discuss and analyze these two proposals.

1. T & M Contract with Economic Price Adjustment (EPA)

Economic Price Adjustments (EPA) were originally designed to cope with the economic uncertainties that threaten long-term fixed-price arrangements [Ref. 37:p.1-21]. The heart of the EPA lies in the objective that the contractor should benefit or lose in relation to his performance, not due to circumstances outside his control. Because the T & M contract locks the contractor into a fixed-labor rate, the EPA concept may also be suited to this pricing arrangement.

Without EPAs, contractors can be expected to quote contingency allowances into the T & M fixed-labor rate, large enough to eliminate or reduce the risk of loss. The danger of these contingencies is obvious. The contractor may be hurt if the changes exceed the estimate and the Government may pay unreasonably high prices if the contingency does not materialize. As suggested in Chapter IV, being locked into a low fixed-labor rate may also be a catalyst to other post award problems. These dangers are amplified when the contract is a lengthy IDTC with a base and several option years. It is the T & M IDTC with one or more option years which is best suited for an EPA.

The first step in establishing an EPA is to determine an appropriate adjustment index that both parties can agree to

during negotiations. Since a T & M contract already reimburses materials at cost, only the labor variable has uncertainty and therefore qualifies for adjustment. Although a labor index could be constructed that both parties might agree on, it would likely be easier to use an existing, recognized method of adjustment. Labor could be adjusted by actual labor costs or by consulting the U. S. Department of Labor's Bureau of Labor Statistics (BLS) indexes which are categorized by industry and region [Ref. 4:p.14-14].

If actual labor costs are used, the contract schedule should describe in detail (1) the labor categories subject to adjustment, and (2) the labor rates. Like the EPA clause for Fixed-Price with Economic Price Adjustment (FPE) contracts, the T & M contract EPA clause should limit the aggregate increase to 10 percent, and have no limit on downward adjustments if actual labor costs are used. The adjustment should only apply to exogenous variables, not ones controllable by management. If the BLS index is used, which is more appropriate for contracts exceeding one year in length, there should not be a 10 percent upper limit since inflation could exceed that amount.

The next step is to determine what "triggers" the EPA. To cover this requirement, it is suggested that a clause substantially the same as FAR 52.216-4 be adopted, omitting all references to materials. This clause provides procedures on contractor submissions of EPA requests and the negotiation

process of the EPA. The contractor must be able to support the proposed costs and their application. The negotiation process provides agreement that the trigger was indeed hit to allow determination of a new fixed-labor rate and corresponding new contract amount and ceiling.

The following are the advantages and disadvantages of this proposal.

ADVANTAGES

- The inclusion of an EPA in a T & M contract would take out all contractor uncertainty regarding labor costs and therefore the Government would expect a corresponding decrease in the negotiated fixed-labor rate.
- The ceiling price would be expected to be lower.
- The profit portion of the fixed-labor rate would be less since there is minimal uncertainty and no need to build-in contingencies.
- With the labor cost uncertainty gone, the contractor would have no legitimate reason to resort to post award strategies to intentionally increase his labor hours.
- An EPA could encourage contractors to enter into lengthy T & M IDTCs, contributing to long-term supplier relationships.

DISADVANTAGES

- More administrative effort is required during pre-award to establish and negotiate the adjustment index for the EPA.
- More administrative effort is required during post award to negotiate a new fixed-labor rate and a new ceiling price when the contractor submits an EPA request.
- Budgeting becomes slightly more complicated under the EPA since figures will change if the escalation clause is exercised.

2. T & M Contract with a Fixed Fee

As illustrated in characteristic ONE of Table VI, the fixed profit percentage built into the negotiated fixed-labor rate creates an incentive for the contractor to increase labor hours in order to increase profit. A logical means of preventing this is to take the profit out of the fixed-labor rate. This section proposes the notion of a fixed fee/profit.

Eliminating the profit in the fixed-labor rate and establishing a fixed fee would eliminate any variability in profit. The contractor would receive a fixed fee regardless of the actual number of labor hours used. In this proposal, a ceiling on the number of hours is recommended to reduce the problem of characteristic TWO from Table VI (i.e. the ability to realize a higher profit percentage after fixed elements of overhead are covered). The example provided in Figure 5 of Chapter IV is re-visited using a fixed fee concept. The new example provided in Figure 7 illustrates the Rate of Return (ROR) advantage to the contractor of finishing the work in less time.

Figure 7 shows a distinct ROR advantage to the contractor for finishing in the least amount of time as possible. It shows a clear ROR advantage of not increasing costs up to the ceiling. In this regard it resembles a fixed-price type contract. Advantages and disadvantages of this proposal follow Figure 7.

- EXAMPLE -

Fixed Fee Concept Combined
with a T & M Contract

A contractor is hired to repair a malfunctioning ship-board magnetic compass since ship's force was unable to affect repairs. Both parties agree to a T & M contract with a fixed fee since the nature of repairs is unknown. There is an agreed on fixed-labor rate of \$27.00 per hour (which is fully burdened except for profit), and a fixed fee of \$10.00. Materials come to \$110.00 including material handling costs. A ceiling of 8 hours is negotiated. A ROR comparison follows:

	Contractor Finishes in 3 hours	Contractor Finishes in 8 hours
Fixed-Labor Rate	\$ 81.00	\$ 216.00
Fixed Fee	10.00	10.00
Materials	110.00	110.00
Total Cost to Govt	201.00	336.00
Profit to Contractor	10.00	10.00
Rate of Return (ROR) *	12.3 %	4.6 %

* For this example ROR is calculated as fixed fee divided by total labor to illustrate only the labor effect on differences in the ROR.

Figure 7. Example of Fixed Fee Concept with T & M Contract

ADVANTAGES

- The primary opportunity for increased labor hours leading to increased profit is eliminated since profit/fee is fixed.
- The contractor is encouraged to use fewer hours than a regular T & M contract in order to earn a higher Rate of Return (ROR). When the fee is fixed, the contractor's ROR increases as labor hours (costs) decrease, which is an incentive to finish earlier.

- The Fixed Fee concept is only slightly more difficult to administer than a regular T & M contract. Negotiations would have to determine a fixed fee in addition to a fixed-labor rate (which now excludes profit). In a sealed bid scenario, the contractor would bid a fixed-labor rate (which is fully burdened except for profit), a separate fixed fee/profit, and an estimate on materials. A contracting officer could quickly and easily compare and contrast separate contractor bids. It would be readily apparent whose costs and profit are lower. In a competitive proposal or sole-source scenario, only the fixed fee and the ceiling on hours would likely be subject to disagreement, since the fixed-labor rate is purely based on costs which the contractor would have to support.
- A binding ceiling on the number of hours can and should be implemented to limit cost growth. If a contractor exceeded the ceiling on hours, it would cut into his fixed fee, and not result in the Government paying more. In exceptional circumstances, the contracting officer could increase the ceiling on the hours if events outside the contractor's control prevent finishing under the ceiling.
- Ease of budgeting is still maintained. Because the contractor's profit/fee is fixed, and there is a ceiling on the hours, the contract becomes in essence a fixed-price contract after the ceiling is reached.
- This proposal can be combined with the above proposal to include an EPA. Inclusion of an EPA would also likely allow the fixed fee/profit and the ceiling to be lower.

DISADVANTAGES

- Characteristic TWO from Table VI is still present to some extent. There is still the incentive to increase labor hours up to the ceiling in order to cover more of the fixed elements of overhead to realize a higher ending profit once fixed costs are covered. This can be mitigated however, through use of a well-conceived binding ceiling on the number of hours.

The previous two proposals could be implemented separately or together depending on the situation. Both keep the

administration and budgeting process relatively simple without substantially increasing the risk to either party.

The FAR currently has no provisions for either of the two proposals recommended above. The EPA concept however, was used in an Air Force T & M IDTC for installing and maintaining secure communications switches (Red Switches) [Ref. 29:p.12]. Although this particular contract had many other problems associated with it, no negative mention of the EPA provision was made in the audit report. Because the advantages of the fixed fee concept with a T & M contract seem to outweigh the disadvantages, it is recommended that the concept be put to practice on an experimental basis to ascertain its feasibility.

D. SUMMARY

Chapter V has discussed and analyzed the controls which should be considered to mitigate the pre-award difficulties outlined in Chapter IV. The controls suggested can serve as a management guide to consult during pre-award to alleviate the occurrence of future difficulties. The chapter also examined possible incentives/controls which might be instituted to further reduce the risk of the traditional T & M contract and improve its overall efficiency and acceptance. Two hybrid variations of the T & M contract were postulated, one using an EPA and the other a fixed fee concept.

The following chapter will examine those controls which should be incorporated to mitigate the post award difficulties presented in Chapter IV. These controls can serve as a management guide, to consult during post award, to alleviate these difficulties.

VI. TIME AND MATERIALS CONTRACT POST AWARD CONTROLS

A. INTRODUCTION

This chapter analyzes the post award difficulties outlined in Chapter IV and proposes controls to mitigate their occurrence. The chapter will begin with a general discussion of surveillance requirements, factors, and responsibilities. This is followed by suggested controls and surveillance to implement which can be used as a management guide to reference during post award for mitigating the T & M contract post award difficulties outlined in Chapter IV.

B. GENERAL SURVEILLANCE REQUIREMENTS

Whereas controls in the pre-award phase can take the form of incentives, controls in the post award arena are primarily established through surveillance. The FAR's guidance on Government surveillance of T & M contracts is very broad, it states,

A time-and-materials contract provides no positive profit incentive to the contractor for cost control or labor efficiency. Therefore, appropriate Government surveillance of contractor performance is required to give reasonable assurance that efficient methods and effective cost controls are being used. [Ref. 5:part 16.601(b) (1)]

The objective of this chapter is to provide a management guide to reference during post award of T & M contracts to assist in the FAR requirement of "appropriate Government

surveillance of contractor performance." In general, performance surveillance is a function of contract administration used to determine contractor progress and to identify any factors that may delay performance. Performance surveillance involves Government review and analysis of contractor performance plans, schedules, controls, and industrial processes as well as the contractor's actual performance under them [Ref. 2:p.243].

1. Surveillance Factors

Any discussion of surveillance must be tempered with addressing factors which should be considered in determining the appropriate level of performance surveillance. Naturally, not all contracts will receive the same level of surveillance due to resource constraints. Factors which should be considered in determining an appropriate level of Government surveillance include [Ref. 5:part 42.1104]:

- Size of the contract in terms of: length of period of performance; estimated cost; extent of the effort involved; and total price.
- Significance of the contract in relation to overall organizational objectives.
- Nature and complexity of the work which contributes to risk allocations.
- Dependency of other programs/contracts on the outcome.
- Type of contract being administered.
- Location where the work is being performed.
- Impact of modifications and changes on the contract.

- Contractor's past history of contract performance.
- Contractor's experience with the type of effort involved.
- Availability of adequate monitoring resources, including personnel and progress measuring techniques.
- Contracts less than the small purchase threshold (\$25,000) do not generally require surveillance.

2. Post Award Orientation Conference

Once the above factors have been considered, the contractor must be briefed on the nature and level of planned surveillance. One of the best means of doing this is through the Post Award Orientation Conference (PAOC). The PAOC also serves to achieve a clear and mutual understanding of all contract requirements and identifies and resolves potential problems. A sample PAOC agenda, which outlines the essential discussion items for a T & M Contract, is included as Appendix D.

In connection with preparing for the PAOC, the ACO, as team leader, should convene a meeting of all functional specialists, including DCAA auditors, who will be involved in the surveillance of contract performance. The purpose of this meeting is to develop a coordinated plan establishing the action and surveillance responsibility for each team member, with the plan reduced to writing and included in the contract file. At a minimum the plan will provide for [Ref. 38:part 16.601]:

- A determination of the adequacy of the contractor's accounting system to accurately identify and record costs and to provide a basis for auditing.
- Surveillance of the contractor's plant operations to ensure that the direct labor and direct materials being charged to the contract are allowable, allocable, and reasonable. The plan must provide for periodic floor and time card checks to ascertain quantities and types of direct material and direct labor actually being used. Periodic floor and time card checks are the primary means by which the Government detects whether or not it is being inappropriately charged.
- Periodic audits of the contractor's billings under the contract. Such audits may be coordinated with a periodic floor check.
- Ensuring full and complete communication with the ACO and other team members on the status of surveillance efforts.

3. Contracting Officer's Technical Representative

The PAOC can also be a prime opportunity for the Government to introduce principal participants in the post award phase of the contract. One of the key players in the Navy contracting system is the Contracting Officer's Technical Representative (COTR), sometimes referred to as the Contracting Officer's Representative (COR). The COTR is appointed in writing by the PCO after completing Naval Supply Systems Command (NAVSUP) approved COTR training. The COTR's primary duty is to provide technical direction/clarification and guidance with respect to the contract specifications or statement of work. Other COTR responsibilities include

[Ref. 39]:

- Review of contractor invoices to ensure that labor hours, labor mix, materials, travel, and other direct costs identified are consistent and reasonable for the effort completed during the period covered by the invoice. He should ensure invoices are in sufficient detail, in the way of adequate breakdown by individual task and man hours by labor category, to permit verification.
- Maintenance of a COTR file by contract and/or delivery order which contains documentation relative to the actions taken by the COTR.
- Monitoring the contractor's progress and identifying promptly to the PCO all observed substantive deficiencies in contract performance or other instances of non-compliance with contract terms or conditions.
- Identify periodically to the PCO the cumulative incurred hours in each labor category resulting from taskings if the contract specifies a labor mix and requires identification of estimated or negotiated hours in the technical direction or task order.
- Submission, to the contracting and ordering officers, a written report on contractor performance. This report must be submitted within 60 days of contract (delivery order) completion, but in no event less than annually. The report should be compiled from COTR file documentation and should address all aspects of contractor performance including cost effectiveness, quality, and timeliness.
- Review technical qualifications of proposed substitute key personnel.

As the above indicates, the COTR is a key player and assistant to the PCO and ACO during post award and can be valuable during pre-award as well. As a technical expert, the COTR is especially crucial in monitoring T & M contracts since little reference material or standardization is usually available to assist in the surveillance effort. The COTR's technical abilities also make them an excellent resource prior to negotiating delivery orders under an IDTC since they can

scope out jobs and job sites to provide a Government estimate on labor hours and materials to validate contractor bids and proposals. An excellent NAVSUP instruction exists which outlines the requirement for a COTR and provides: sample nomination and appointment letters; a COTR functional review questionnaire; a contractor's invoice review form; a sample report of contractor's performance; and requirements for a proper COTR documentation file [Ref. 39].

The importance of the COTR's role in preventing post award difficulties is evident in the proposed controls which follow. The COTR is directly involved in controlling eight of the eleven post award difficulties summarized in Table VIII. Only in problems SEVEN, EIGHT, and TEN is the COTR's responsibility negligible. The next section will examine post award controls and/or surveillance to mitigate the problems highlighted in Chapter IV.

C. CONTROLS TO PREVENT POST AWARD DIFFICULTIES

This section will analyze the post award difficulties presented in Chapter IV and propose controls and adequate surveillance to alleviate them. The reader will find it useful to periodically refer to Table VIII since the problems summarized in it will be referred to, by number, extensively in this analysis. The proposed controls will assume the status quo, in that neither the EPA or fixed-fee concepts proposed in Chapter V were implemented.

It should be pointed out however, that inclusion of an EPA and/or a fixed-fee concept, may well reduce the amount of surveillance required on a T & M contract. Six of the eleven post award problems would likely be affected in a positive manner if the two recommended incentives from Chapter V were implemented. Specifically, problems ONE through FOUR, EIGHT, and NINE, would all likely be mitigated if the contractor were only compensated with a fixed-fee and allowed to index his fixed-labor rate to inflation.

Nevertheless, the following are proposed controls to the post award problems presented in Chapter IV.

1. Problem ONE - Incentive to Inflate Labor Hours

The contractor's incentive to inflate labor hours to increase profits under the traditional T & M contract can be mitigated through five proposed controls.

a. Clear Statement Of Work (SOW)

The importance of a clear SOW cannot be overemphasized since a nebulous SOW can give the contractor the opportunity to charge nebulous hours. This control obviously must begin in the pre-award phase when the SOW is drafted. A very specific SOW with detailed line items for each different action is essential to provide the COTR a suitable reference to compare labor-hour charges to contract requirements and to allow holding the contractor accountable for the hours charged. The contractor can and should be

required to pinpoint labor hours charged against SOW line numbers, thus allowing simple correlation of labor charges to contract requirements.

b. Review of Payroll Procedures

A review of the contractor's internal time card and payroll procedures may reveal inadequate procedures for controlling labor costs. Appendix E contains a checklist for the review of the contractor's time card and payroll procedures.

c. Proper Invoice Procedures

Invoices must be reviewed and certified by Government representatives who are in a position to determine if amounts billed are proper and necessary. This requirement should start with the requiring activity, followed by the COTR also reviewing and signing invoices before submittal to the ACO for payment.

Invoices must also be submitted in sufficient detail to permit verification of contractor charges. Invoices must include details of charges to individual tasks from the SOW and must identify man-hours charged to specific labor categories.

d. Monthly Time Report

All Navy contracts which designate a COTR must also provide for the contractor to provide the Government a monthly contract status report [Ref. 39:p.5]. The report must require information such as the number of hours expended, the

total costs incurred, the average hourly rate incurred, accomplishments to date, data status and delivery, etc. The report should also provide by name, who is charging hours and to what contract line item, and explain all schedule slippage against a schedule outline. The report must be sent to the PCO, COTR, and the ordering officer (if applicable). The requirement is easily fulfilled by inclusion of a data requirement on the DD Form 1423, Contract Data Requirements List. [Ref. 39:p.5]

e. Monthly Program Management Reviews (PMR)

In larger T & M contracts, monthly PMRs may be appropriate to evaluate the overall status of the contract and to resolve problems that may be affecting contractor performance. Problems reported in the monthly progress reports above should be discussed at a minimum. Periodic meetings between cognizant technical personnel and the contractor may also be held to discuss technical questions, important to both, to ensure the contractor is proceeding down the Government's desired path.

2. Problem TWO - Ceiling Price Often Accomplishes Little on T & M Contract

As stated in Chapter V, the Government's best assurance against unplanned cost growth lies in drafting the initial contract with a well-conceived binding ceiling price. If this is not done at the outset for whatever reason, a binding ceiling can also be incorporated during post award

after one or a number of overruns have occurred. This may be appropriate in those unique situations where the uncertainty is too great during pre-award to even attempt making the ceiling binding at the outset.

Regardless of when a binding ceiling is incorporated, the contractor must be made aware that the ceiling truly is binding and it denies the contractor's right to stop work when the ceiling is reached. Again, contracting officers must consult their legal staffs prior to incorporating any potentially conflicting clauses and conditions in contracts.

3. Problem THREE - Use of Lower Skilled Workers

The COTR's technical services are invaluable in monitoring the work site for inefficient labor. Frequent floor checks, including time card reviews are the best means of detecting this problem. The Government may also put provisions in their T & M contracts allowing the right to request résumés on employees with questionable skills.

4. Problem FOUR - Use of T & M Contract as Vehicle for Training New Personnel at Government Expense

The same controls outlined for problem THREE also apply to problem FOUR. In addition, there are FAR guidelines if the contractor chooses to intentionally train new personnel at less than the contracted wage rate [Ref. 5:part 52.222-9].

5. Problem FIVE - Use of T & M Contract as Vehicle for Ordering Non-Related Equipment

This problem can be mitigated through several simple actions. First, a clear SOW can greatly assist the COTR in his review of invoices to ensure material procured is reasonable and necessary for the contract. Also, purchases over a certain dollar value threshold could be designated in the contract as requiring pre-approval by the ACO.

Additionally, a data base of materials ordered under a T & M contract could be developed and maintained to screen future material invoices against. Those materials not in the data base would stand out as potential candidates for inquiry. This data base could also serve as historical data for possible conversion of T & M contracts to FFP contracts in the future. Appendix F provides a simple checklist the COTR and ACO can consult to evaluate material requests.

6. Problem SIX - Problems With Over-and-Above Concept

The DFARS prefers that the contractor and ACO mutually agree to procedures for administration of Over-and-Above work, but states the ACO can unilaterally direct the procedures if agreement cannot be met [Ref. 12:part 252.217-7028]. The ACO should nonetheless, determine procedures that minimize delay and disruption to the contractor's effort to complete the requirement, when repairs beyond what is covered in the basic contract are encountered. The procedures should be the

absolute minimum to prevent undue delay while still maintaining Government control of cost growth.

Since the DFARS does allow blanket work request authorizations to streamline the process, consideration of a flexible process might benefit both parties with simplified administration [Ref. 12:part 217.77]. For example, a staggered process could be used, based on dollar value limitations, where increasingly more expensive Over-and-Above work would require greater controls. Small increases which are within the general scope of the requirement might only require a simple work request and approval memorandum (to provide the ACO sufficient information for executing a modification) whereas a larger increase may require a detailed work request and face-to-face negotiation of a fair and reasonable price for the modification.

7. Problem SEVEN - Lack of Performance Flexibility Due to Fixed-Labor Rates

All possible contingent labor categories should be incorporated into the basic contract at the outset to avoid having to initiate a modification to add a needed labor rate. If in doubt, a labor category with an associated fixed-labor rate, should be included in the T & M contract up-front. The only remedy available if a needed labor category is not in the basic contract is to conduct negotiations, to determine the fixed-labor rate for the proposed additional labor category, and initiate a modification.

8. Problem EIGHT - Disadvantage of Fixed-Labor Rates During Periods of Inflation

The Government must recognize the effect inflation has on fixed-labor rates and take appropriate action to prevent placing the contractor into untenable situations. Because this problem may contribute to problems ONE through FOUR and ELEVEN, the Government should either consider incorporating an Economic Price Adjustment or establishing shorter term contracts to alleviate the effects of inflation.

9. Problem NINE - Lack of Resources for Adequate Surveillance

This problem relates to the factors to consider when determining the nature and level of surveillance described in Section B above. No contract administration office has all the surveillance resources it desires, therefore it must closely analyze these factors to determine a suitable assignment and mix of resources to properly safeguard the Government's interests.

Consideration can be given to requesting technicians or operators from the requiring activity to assist in surveillance. Although these personnel may not be concerned with the costs of restoring "their" system, they are very concerned with the system functioning properly. At some level of the requiring activity however, there will be someone concerned with the cost of the repairs, be it the supply officer, fiscal officer, comptroller, etc. Their assistance

should also be requested. The combination of these two parties at the requiring activity can provide an invaluable outside resource when in-house assets are insufficient. The assistance of DCAA can also be requested for larger T & M contracts.

10. Problem TEN - Growing Contractor's Personnel System Changes

This problem arises as a contractor grows and alters its labor categories. Since it is the contractor who is altering its labor categories, it is the contractor's responsibility to provide and justify some sort of cross-reference list to allow the Government to make payment. Failure to provide and justify a change in labor categories would only hurt the contractor since payment cannot be made without it. This topic should be covered during the PAOC to advise the contractor of what documentation is required for payment to occur.

11. Problem ELEVEN - Time Card Fraud

Section D of Chapter IV provided five examples of time card difficulties which may indicate fraud. Recognizing these anomalies is the first step in discovering them. Even when unintentional or without a fraudulent motive, it undermines confidence in the contractor's accounting and control systems and should raise questions as to the validity of other submissions. It also taints historical data derived from the contract by making a contract appear more efficient than if

the true costs were known. The issue of whether a mischarge is a mistake or a crime relates to the intent of the maker and is beyond the scope of this thesis. If fraud is suspected, DCAA should be called in for a complete audit. Suffice it to say, errors, regardless of intent, must be detected and corrected.

The best means of detecting time card difficulties is through frequent and random time card and floor checks. Frequent and random checks will assure the contractor that his records will be scrutinized, motivating the contractor to ensure his records are current, accurate, and complete.

D. SUMMARY

Chapter VI has proposed controls to mitigate the occurrence of the post award difficulties identified in Chapter IV. When available, the views of procurement professionals concerning post award controls were discussed. The controls and surveillance suggested can be used as a management guide to reference during post award to assist the contracting officer in the proper administration of T & M contracts.

The next chapter presents the researcher's conclusions and recommendations regarding the research effort. Included are answers to the primary and subsidiary research questions, and recommendations for further research.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. RESTATEMENT OF OBJECTIVES

The use of T & M contracts for obtaining needed supplies and services has traditionally been viewed with apprehension due to the potential for the Government to incur great cost risk during contract performance. However, T & M contract use is invaluable in situations where the extent or duration of the work is unknown at the outset, to avoid undue risk on either party. This dichotomy established fertile ground for determining how to best manage the T & M contract, given that a determination has been made that it is the best contractual vehicle available for a particular Government requirement.

The goal of the research effort was to determine how to best manage the T & M contract, given that it is deemed the most appropriate contracting method for a particular Government requirement. Specifically, the objective of this study was to identify, to the maximum extent possible, the current areas of difficulty associated with the T & M contract and to suggest pre-award and post award incentives and/or controls to institute to mitigate these difficulties. The proposed incentives and controls could be used as a reference during pre and post award to mitigate the potential adverse effects of this contracting method.

B. CONCLUSIONS

Based on the results of this study, the following conclusions can be drawn:

- There has been a marked increase in both the use and diversity of use of T & M contracts primarily due to the simplicity of the T & M contracting method.

Tables II, III, and Appendix C illustrated, and personal interviews confirmed, an expansion in T & M use and a diversity of use. Armed with only generalities and limited restraints for appropriate uses of T & M contracts in the FAR and other literature, DOD contracting officers have developed many creative uses of this contracting method to meet Government requirements. Contributing to this expansion were the following factors:

- The only FAR criterion for the use of a T & M contract is that uncertainty in the extent or duration of the work is too great to accurately estimate costs with any reasonable degree of confidence.
- The only barriers to the use of a T & M contract are that a Determination and Findings (D & F) must be executed and a ceiling price must be established.
- From the research effort, T & M contracts were found to be easier to budget, easier to award, generally require fewer modifications, and merge very well with IDTCs. All these features are viewed favorably by busy contracting officers under pressure to meet mandatory schedules imposed on them.

The above factors indicate simplicity in the use of T & M contracts. Simplicity, in and of itself is not bad, but in fact is needed in Government contracting to streamline the

acquisition process, provided existing regulations are not circumvented. The FAR restraints of a D & F and a ceiling price would generally curtail excessive use of T & M contracts if strictly followed however, audit reports have routinely cited these as discrepancies. The danger occurs because those actions taken during pre-award to "expedite" award often necessitate increased surveillance during post award.

- Contracting officers are not completely adhering to existing regulations outlined in the FAR nor are supervisors adequately ensuring these regulations are being met.

The FAR requirements of executing a D & F and including a ceiling price are often discrepancies in audits of T & M contracts. It is likely that time constraints motivate busy contracting officers to "bend the rules" and do a less than adequate job of meeting regulations. Likewise, supervisors are under the same pressures and constraints, contributing further to marginal compliance with reasonable regulations. Generally speaking, although upper echelons of the Government discourage T & M contract use, the closer one gets to where the contracting work is actually performed, the more the Government likes the T & M contracting method due to its simplicity.

The FAR regulations have two primary objectives. First, the intent of the FAR limitation requiring a D & F was presumably to minimize the use of T & M contracts (due to

their traditional incentive for the contractor to increase labor hours to increase profit) by requiring contracting officers to justify that no other contracting method is suitable. Second, the requirement for a ceiling price was likely to reduce the potential for unplanned cost growth. Both of these objectives are reasonable given the potential difficulties of traditional T & M contracts. This reasonableness was confirmed during personal interviews since no one contacted recommended reducing either of these requirements.

The overall goal therefore, is to determine an uncomplicated means for contracting officers to meet these two objectives while taking advantage of the simplicity of this pricing arrangement and minimizing the administrative effort of implementing and enforcing the intent of the regulations. Possible restructuring of the T & M contract may achieve these two objectives while minimizing administrative effort.

- **Contractors do not favor T & M contracts in times of actual or expected inflation due to the fixed-labor rate.**

The negative effect of being locked into a fixed-labor rate is obvious when a contractor's prices are rising. The problem is exacerbated in lengthy IDTCs with a base year and several option years. Contractors are reluctant to enter into T & M contracts during actual or anticipated inflation without escalation options being available. This problem has received

minimal attention over the last several years since inflation in the United States has been kept very low. If inflation were to escalate, this issue would become significant for both contracting officers and contractors. As such, thought should be devoted to this problem now while there is time to thoroughly think the process through.

- **The Government's primary reservation with T & M contracts lies in the characteristic that increased labor hours leads to increased profit to the contractor.**

The T & M contract has a fixed profit percentage built into the negotiated fixed-labor rate. Because the quantity of labor is highly variable during contract performance, there is an opportunity for the contractor to simply increase labor hours, up to the ceiling, to increase his profit. This supports the traditional view that T & M contracts provide little incentive to control costs. Although there is no argument that the contractor should be adequately rewarded for the risk he entails, he should not have the opportunity for added profit due to either planned or unplanned inefficiencies. Ideally, the contractor should be fairly rewarded with profit based on his true risks, not overcompensated at the Government's expense.

- **The majority of T & M contract pre-award problems are under the complete control of the contracting officer to mitigate or eliminate.**

Seven of the nine problems noted during pre-award are directly controllable by the contracting officer and not the contractor. Specifically, the following pre-award problems can be directly controlled by the contracting officer with no assistance or support from the contractor:

- Award of a T & M contract despite availability of historical data for awarding a FFP contract.
- Improper evaluation of T & M contract options.
- D & F not prepared or not prepared properly.
- Improper forwarding of T & M contract copies.
- Application of improper profit percentages.
- Failure to include required ceiling price.
- Improper estimates on ID-RC contribute to higher contractor overhead.

This finding is significant because it indicates the Government can control a significant amount of pre-award T & M contract risk since they control all of these factors. Adherence to existing regulations and guidance by contracting officers would preclude all of these problems and thus, a majority of the pre-award T & M contract problems.

- **A slight majority of T & M contract post award problems are the responsibility of the contractor and thus require adequate Government surveillance to mitigate.**

Although many of the T & M contract pre-award problems are directly controllable by the contracting officer, several post award problems are primarily controllable by the contractor,

necessitating adequate Government surveillance to mitigate them. Specifically, the contracting officer must be alert for the following post award problems:

- The incentive of the contractor to inflate labor hours.
- The ceiling price can accomplish little on a T & M contract if it is viewed as non-binding.
- The contractor's use of lower-skilled workers.
- The contractor's use of the T & M contract as a vehicle for training new personnel at the Government's expense.
- Contractor time card fraud.

These problems can be either intentional or unintentional. Although the contractor may be purely motivated to maximize profit, he may have also been compelled to resort to many of the above abuses due to the adverse affect of being locked into a fixed-labor rate during an inflationary period. Regardless of the reason for the problems, it is incumbent upon the Government to establish adequate surveillance to mitigate these potential post award problems.

- **The Government can control pre-award and post award difficulties through proper planning, adherence to existing regulations, and use of existing resources.**

Although there is a potential for problems with T & M contracts in both the pre and post award phases, these difficulties can be mitigated by the Government through proper controls. Among the controls found in this research effort were the following:

- Ensure a clear statement of work to help prevent a number of T & M contract problems.
- Develop a database (preferably computerized) for rapid storing and retrieval of historical data to allow award of FFP contracts.
- Follow existing regulations, including: preparation of D & Fs; inclusion of ceiling prices; proper forwarding of contract copies; proper determinations of profit percentages; and proper exercising of T & M contract options.
- Establish well-conceived binding ceiling prices, which have been reviewed by the legal staff, since they are the primary means of preventing undesired cost growth.
- Ensure supervisors become more involved in the award and administration of T & M contracts in both establishing and enforcing existing regulations and internal procedures.
- Exploit the invaluable COTR resource during both pre and post award to provide insight and recommendations.
- Promote and capitalize on the Post Award Orientation Conference (PAOC) since it is invaluable to iron out potential difficulties before they occur.
- Utilize monthly Performance Management Reports (PMRs) as an additional tool to provide status of T & M contracts.
- Carefully evaluate surveillance requirements to match the complexity of the Government requirement.

C. RECOMMENDATIONS

In the course of this research effort, several areas were highlighted where changes to current practices and/or policies could provide worthwhile improvements in the effectiveness of T & M contracts. Any one or all of the proposed recommendations which follow would help to mitigate the potential difficulties of T & M contracts.

- Supervisors must develop streamlined requirements for preparing Determinations and Findings and better communicate these requirements to their respective contracting officers.

Since the FAR requirement for a D & F is deemed appropriate, the goal should be to determine the most streamlined means of achieving the intent of the regulation. To begin, the format of a D & F for a T & M contract should be the topic of discussion to ascertain its minimum requirements in order to prepare a class D & F. Involved in the discussion should be experienced PCOs and ACOs, their supervisors, and DCAA.

The focus of the class D & F format should not be to make a T & M contract the path of least resistance but more to streamline the D & F requirement when it has been determined that the T & M pricing arrangement is the best means of obtaining needed supplies or services. Because a class D & F must be for a specified period of time, contracting offices should request DCAA assistance both before and after the period to evaluate the D & F's effectiveness and modify it accordingly.

Once the format is determined, training must be conducted to communicate the results. Frequent review and a dedicated effort for continuous improvement will also be necessary to ferret out difficulties early on and create a class D & F that is both streamlined and meets the intent of the regulation.

- Contracting offices must develop well-conceived binding ceiling price articles for inclusion in T & M contracts.

A precisely drafted binding ceiling price can operate to deny the contractor of additional funding beyond the ceiling while requiring him to complete performance within the stipulated amount. It is extremely important for contracting offices to have their legal staffs review potential ceiling articles to ensure the enforceability of a binding ceiling. Likewise, once the ceilings become truly binding, much more consideration and time will be required to negotiate them without increasing risk to either party.

- The Government should consider incorporating Economic Price Adjustments (EPA) into lengthy T & M contracts to minimize contractor risk when inflation is present or expected.

The contractor should benefit or lose in relation to his performance, not due to factors outside his control. Without EPAs, contractors can be expected to quote contingency allowances into the T & M fixed-labor rate, large enough to eliminate or reduce the risk of loss. The danger of these contingencies is obvious. The contractor may be hurt if the changes exceed the estimate and the Government may pay unreasonably high prices if the contingency never materializes. The contractor may also be reluctant to even enter into a T & M contract even if the Government desires it. Additionally, lack of an EPA may contribute to numerous post

award problems where the contractor is compelled to take various actions, which may not be in the Government's best interests, to minimize his losses.

Several advantages would be realized if EPAs were incorporated into T & M contracts. First, inclusion of EPAs in lengthy T & M contracts would take out all contractor uncertainty regarding labor costs and therefore the Government would expect a corresponding lower negotiated fixed-labor rate and ceiling price. Second, with the labor cost uncertainty gone, the contractor would have no legitimate reason to resort to post award actions to cut his losses. Finally, an EPA would not eliminate this contracting method from consideration during times of inflation.

- The Government should explore the possibility of developing and undertaking a T & M contract with a fixed fee, on a trial basis.

A logical means of eliminating the opportunity for a contractor to increase his labor hours in order to increase profit would be to omit the profit component built into the fixed-labor rate, and compensating the contractor for profit in a manner which does not encourage inefficiency. A fixed fee concept would accomplish this while maintaining simplicity in negotiations, award, budgeting, and post award.

Negotiations would only be slightly more complicated since a fixed fee in addition to the fixed-labor rate (which now excludes profit) would have to be determined. All other

negotiation points would remain the same as under the traditional T & M contract. Only the amount of the fixed fee and the ceiling would likely be subject to disagreement, since the fixed-labor rate is purely based on costs which the contractor would have to support. The PALT would also not be longer under this proposal.

Ease of budgeting is still maintained. Unless the ceiling is increased, for whatever reason, the worst case cost of the contract is known up-front.

Post award difficulties of inflating hours would be unlikely. Incorporating a fixed fee would eliminate any variability in profit with the contractor receiving the same fixed fee regardless of the length of time the requirement takes. Since the contractor actually receives a higher ROR if he finishes early, he is incentivized to be efficient. Although there is some incentive for the contractor to increase hours up to the ceiling in order to recover more fixed elements of overhead and G & A, the use of a well-conceived binding ceiling would help mitigate this.

D. ANSWERS TO RESEARCH QUESTIONS

1. Primary Research Question

What are the principal features of the Time and Materials contract that are the sources of difficulties and how might these difficulties be mitigated?

The primary feature of a T & M contract which contributes to difficulties is that inclusion of a fixed profit percentage in the fixed-labor rate encourages the contractor to increase labor hours in order to increase profit. Additionally, the effect of overabsorbed overhead, the simplicity of the contracting method, the leverage effect of the ceiling price, and the fact that material is reimbursed at cost creates no incentive for efficient material management, are all features of the T & M contract which contribute to difficulties. Chapters V and VI proposed several controls and incentives to mitigate these difficulties.

2. Subsidiary Research Questions

a. What are the principal characteristics of the T & M contract?

The principal characteristics of a T & M contract are that the contract provides for acquiring supplies or services on the basis of (1) direct labor hours at specified fixed-hourly rates that include wages, overhead, G & A expenses, and profit and (2) materials at cost, including material handling costs as part of material costs, if appropriate. Section B of Chapter II provided a thorough description of each of these T & M contract elements.

b. When are T & M contracts commonly used?

Time and Material contracts are primarily used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence. Chapter III further illustrated the many varied uses of T & M contracts and displayed usage statistics.

c. What are the common difficulties of T & M contracts?

There are numerous difficulties associated with T & M contracts which occur during both pre and post award. Among those noted and analyzed in Chapter IV were the following:

PRE-AWARD DIFFICULTIES

- Award of T & M Contract despite availability of historical data for awarding FFP contracts.
- Improper evaluation of T & M contract options.
- D & F not prepared or not prepared properly.
- Improper forwarding of T & M contract copies.
- Application of improper profit percentages.
- Failure to include required ceiling price.
- Improper estimates on ID-RC contribute to higher contractor overhead.
- Unavailability of lower priced labor categories.
- Contractor buy-ins.

POST AWARD DIFFICULTIES

- Contractor incentive to inflate labor hours.
- Ceiling price often accomplishes little on T & M contract.
- Contractor use of lower skilled workers.
- Contractor use of T & M contract as vehicle for training new personnel at Government expense.
- Government use of T & M contract as vehicle for ordering non-related equipment.
- Problems with Over-and-Above concept.
- Lack of performance flexibility due to fixed-labor rates.
- Disadvantage of fixed-labor rates during periods of inflation.
- Lack of resources for adequate surveillance.
- Growing contractor's personnel system changes.
- Time card fraud.

d. *What are the factors and characteristics of the T & M contract which lead to these difficulties?*

The following five characteristics were noted in Chapter IV as the primary factors leading to T & M contract difficulties.

- The fixed profit percentage built into the fixed-labor rate creates an opportunity for increased costs leading to increased profits.
- The fixed elements of overhead and G & A that are built into the fixed-labor rate creates an opportunity for higher realized final profit percentages.
- The simplicity of the T & M contracting method encourages proliferation.
- There is an adverse leverage effect of the ceiling price.

- Material reimbursed at cost creates no incentive for efficient material management.

e. What have various buying organizations used in order to control T & M contracts?

Several T & M contract controls which have been implemented during pre-award are provided below:

- Ensure a clear statement of work to help prevent a number of T & M contract problems.
- Develop a database (preferably computerized) for rapid storing and retrieval of historical data to allow award of FFP contracts.
- Follow existing regulations, including: preparation of D & Fs; inclusion of ceiling prices; proper forwarding of contract copies; proper determinations of profit percentages; and proper exercising of T & M contract options.
- Establish well-conceived binding ceiling prices, which have been reviewed by the legal staff, since they are the primary means of preventing undesired cost growth.
- Ensure supervisors become more involved in the award and administration of T & M contracts in both establishing and enforcing existing regulations and internal procedures.

f. What checks and balances (incentives and deterrents) could a buyer implement during the pre-award phase that would assist in motivating/ensuring the contractor performs a T & M contract as efficiently as possible?

Chapter V proposed two primary controls and/or incentives which could be implemented to motivate the contractor to perform T & M type contracts in a more efficient manner. These controls included use of an EPA and implementing a fixed fee concept into the traditional T & M

contract. These controls were also discussed in the recommendations section of this chapter.

g. What performance surveillance could be applied during the post award phase to mitigate potential difficulties of using T & M contracts?

The following are post award controls to mitigate potential difficulties:

- Exploit the invaluable COTR resource during both pre and post award to provide insight and recommendations.
- Promote and capitalize on the Post Award Orientation Conference (PAOC) since it is invaluable to iron out potential difficulties before they occur.
- Utilize monthly Performance Management Reports (PMRs) as an additional tool to provide status of T & M contracts.
- Carefully evaluate surveillance requirements to match the complexity of the Government requirement.

E. AREAS OF FURTHER STUDY

1. Conduct an actual case study of implementing a T & M contract, on a trial basis, with a fixed fee feature to ascertain its feasibility. Ideally, the case study would include allowing a contracting activity to release a Request for Proposal (RFP) or Invitation for Bid (IFB) proposing this pricing arrangement for an actual requirement. The entire procurement process should be studied with emphasis on determining if the level of risk to either party is significantly different (either better or worse) than the traditional T & M pricing arrangement.

2. Conduct research on developing a means of gathering and recording historical data to allow rapid retrieval of this information to assist contracting officers in their required reviews of historical data before awarding T & M contracts. The research should explore existing methods, if any, to determine if an adequate system exists and whether it can be expanded for use by other contracting offices.

F. SUMMARY

From this study, it is evident that traditional T & M contracts provide little or no incentive for contractors to control labor hours expended as evidenced by the nature and extent of current problems. The current controls also incentivize the contractor to increase labor hours up to the ceiling in order to realize a higher profit. The existing regulations outlined in the FAR, if followed, would mitigate many of the problems but still do not incentivize the contractor to keep labor costs below the ceiling. Likewise, they run counter to the contracting officer's desire to quickly award contracts. Continued vigilance by contracting supervisors is needed to ensure the intent of regulations are followed. Implementing a fixed fee concept into the T & M contract would achieve the desired outcome of incentivizing the contractor to minimize labor to maximize his ROR. It would also not add appreciably to the administrative requirements of this contracting method.

APPENDIX A

LIST OF INTERVIEWS

1. Interview between Mr. Steve Wiley, Industrial Engineering Technician, Pricefighters, NAVSUP Detachment and the researcher, 03 Feb 94.
2. Interview between Mr. Cullifer, Supervisor of Contracts, SUPSHIP San Diego and the researcher, 04 Feb 94.
3. Interview between Ms. Beverly Boogich, Comptroller, PWC San Diego CATS Center and the researcher, 04 Feb 94.
4. Interview between Ms. Elena Gertes, Contract Administrator, NRCC San Diego and the researcher, 07 Feb 94.
5. Interview between Mr. Eugene William, Contract Surveillance Team, PWC San Diego CATS Center and the researcher, 08 Feb 94.
6. Interview between Mr. Bog Cengia, Contracting Officer, NRCC Detachment Long Beach and the researcher, 09 Feb 94.
7. Interview between Mr. Mike Gibson, Associate Director Operational Contracting Office, McClelland AFB and the researcher, 11 Feb 94.
8. Interview between Ms. Holly Moore, Administrative Contracting Officer, McClelland AFB and the researcher, 11 & 18 Feb 94.
9. Interview between LtCol Fred Mason, Chief of Central Contracting Division, McClelland AFB and the researcher, 11 Feb 94.
10. Interview between Mr. Bruce Eades, Acting Chief (PCO) Environmental Contracting, McClelland AFB and the researcher, 11 Feb 94.
11. Interview between Mr. Ken Harsha, Procuring Contracting Officer, McClelland AFB and the researcher, 14 Feb 94.
12. Interview between Mr. Gary Bowe, Chief of Contract Policy & Pricing Committee, McClelland AFB and the researcher, 14 Feb 94.

13. Interview between Ms. Diane Webb, Procuring Contracting Officer, NRCC Detachment Long Beach and the researcher, 15 Feb 94.

APPENDIX B

INTERVIEW QUESTIONS

Experience Level:

Grade _____

Position _____

Years experience _____

Small Purchase or Large Purchase _____

PRE-AWARD RELATED QUESTIONS

1. What type of supplies or services are obtained using T & M contracts? (i.e. R & D, Repair or overhaul, Services, etc.) Please provide examples.
2. What frequency are T & M contracts entered into: percentage of total contracting actions; total number per year; etc.? Please provide any available statistics on frequency, dollar amount, etc.
3. What difficulties have you encountered with T & M contracts during pre-award?
4. What factors/characteristics of the T & M contract do you feel lead to these difficulties?
5. What features do you currently incorporate into the T & M contract to help control/mitigate possible future adverse effects?
6. What checks/balances (incentives/deterrents) could a buyer use during pre-award to help motivate the contractor to perform as efficiently as possible on a T & M contract? i.e. If you could change the regulations, what would you recommend?
7. Do you feel T & M contracts are easier to administer than normal Cost Reimbursable type contracts?
8. Do the number of T & M contracts increase (as a %) in the 4th quarter (to evaluate if time constraints contribute to awarding a quick and easy T & M contract)?

9. What criteria do you use/evaluate to decide whether to use a Cost Reimbursable or T & M contract?
10. Do you use any directives, other than FAR, DFARS, etc., for award of T & M contracts? If so, what are they?

POST AWARD RELATED QUESTIONS

1. What difficulties have you encountered with T & M contracts during post award/contract administration?
2. What factors/characteristics of the T & M contract do you feel lead to these difficulties?
3. What post award surveillance features have you used to attempt to control the potential negative outcomes of T & M contracts?
4. What factors do you consider when determining the amount and nature of surveillance, including thresholds if applicable?
5. What extent are COTR's used to monitor T & M contracts? Is there a dollar threshold involved before monitoring is done?
6. Is a Government representative reviewing timesheets for labor hours charged? What frequency?
7. What surveillance could be used during post award for T & M contracts to prevent potential negative outcomes? i.e. If you could change the regulations, what would you recommend?
8. Are there any other comments regarding T & M contracts you would like to add?

Source: Developed by Researcher

APPENDIX C

SUPPLIES AND SERVICES PROCURED IN DON USING T & M CONTRACTS FOR FISCAL YEAR 1993

Data Run: 03/21/94
Procurement Management Reporting System (PMRS)
Total Actions/Dollars
By Contract Type (C5=Y)
Fiscal Year 1993 (Oct-Sep)

NAME/DESCRIPTION	TOTAL ACTIONS	TOTAL DOLLARS
A&E Inspection Services (Non Construction)	2	\$ 70538
A&E Production Engineering Services	1	119862
Administrative & Service Buildings	2	301625
ADP Central Processing Unit Analog	1	405169
ADP Components	2	698004
ADP Data Entry Services	4	1677441
ADP Facility Operation & Maintenance Services	105	18454132
ADP Input/Output and Storage Devices	1	375078
ADP Optical Scanning Services	1	409085
ADP Support Equipment	3	213292
ADP System Acquisition Support Services	7	3467729
ADP Systems Analysis Services	15	1473521
ADP Systems Development Services	246	36479789
ADPE Configuration	2	279708
Air Freight	1	15000000
Air Traffic Control Training Facilities	3	703320
Antennas, Waveguides and Related Equipment	2	146693
Architect - Engineer Services (Non Construction)	1	74967
Arts/Graphics Services	3	301128
Automated Info System Design & Integration Svcs	24	2302822
Cabinets, Lockers, Bins, and Shelving	1	44003
Cable, Cord, Wire Assemblies, Comm. Equipment	7	869377
Communication Training Devices	13	3124686
Communications Security Equipment and Components	3	366913
Computer Aided Design/Computer Aided Mfg Svcs	27	1827918
Data Collection Services	4	220595
Disks and Stones, Abrasive	1	73189
Education Services	21	3011117
Educational Services	13	1083187
Elct Countermeasures & Quick Reaction Eq	2	1250000
Electrical & Elct Assys, Boards, Cards	5	1223952
Elevators and Escalators	1	37934
Engine Instruments	1	85210
Engineering Technical Services	610	103340109
Facilities Operations Support Services	12	1738923

NAME/DESCRIPTION	TOTAL ACTIONS	TOTAL DOLLARS
Fire Protection Services	1	\$614063
Flight Instruments	1	187102
General Health Care Services	1	69561
Hazardous Substance Removal/Cleanup/Disposl Svcs	1	72361
Information retrieval Services	4	297075
Installation of Eq/Communication Equipment	24	1261103
Installation of Eq/Electrical & Elct Equip Comp	322	51554396
Installation of Eq/Miscellaneous Equipment	177	22614711
Installation of Eq/Training Aids & Devices	107	9309449
Launchers, Guided Missile	1	162000
Lease or Rental of Eq/Construction Equipment	1	31998
Lease or Rental of Eq/Ships-Sml Craft-Docks	1	87303
Legal Services	2	123175
Logistic Support Services	525	77250614
Machine Shop Sets, Kits, and Outfits	5	195772
Maint & Repair of Eq/ADP Equip & Supplies	30	8283782
Maint & Repair of Eq/Aircraft Comps & Accys	13	1980212
Maint & Repair of Eq/Aircraft Structural Comps	3	474250
Maint & Repair of Eq/Brushes, Paints, Sealers	3	423040
Maint & Repair of Eq/Communication Equipment	140	21941205
Maint & Repair of Eq/Elctrcal & Elct Equip Comp	269	23139849
Maint & Repair of Eq/Engines, Turbines & Comps	3	155763
Maint & Repair of Eq/Fire Control Equipment	4	132862
Maint & Repair of Eq/Fire, Rescue & Safety Equip	1	118362
Maint & Repair of Eq/Guided Missiles	26	10660644
Maint & Repair of Eq/Instruments & Lab Equipment	4	999833
Maint & Repair of Eq/Maintenance & Rpr Shop Eq	3	279219
Maint & Repair of Eq/Medical & Dental Equipment	1	30137
Maint & Repair of Eq/Metalworking Machinery	4	322720
Maint & Repair of Eq/Miscellaneous Equipment	49	6379375
Maint & Repair of Eq/Nonmetallic Fabricated Mats	6	281095
Maint & Repair of Eq/PreFab Structures	1	195075
Maint & Repair of Eq/Pumps & Compressors	1	29120
Maint & Repair of Eq/Refrigeration, Air Con Eqp	1	34880
Maint & Repair of Eq/Service & Trade Equipment	1	99998
Maint & Repair of Eq/Ship & Marine Equipment	48	5798926
Maint & Repair of Eq/Ships-Sml Craft Docks	88	8533187
Maint & Repair of Eq/Toiletries	1	337781
Maint & Repair of Eq/Training Aids & Devices	13	2641506
Maint & Repair of Eq/Vehicles-Trailers Cycles	1	26731
Maint & Repair of Eq/Weapons	2	90375
Marine Architect - Engineer Services	253	44720882
Meteorological Instruments and Apparatus	1	27000
Miscellaneous Communication Equipment	68	6594802
Miscellaneous Construction Equipment	40	4900638
Miscellaneous Fire Control Equipment	1	88640
Miscellaneous Items	4	2657000
Miscellaneous Ship and Marine Equipment	1	686139

NAME/DESCRIPTION	TOTAL ACTIONS	TOTAL DOLLARS
Mobilization/Preparedness Studies	5	\$983300
Modification of Eq/Aircraft Comps & Accys	11	12154970
Modification of Eq/Instruments & Lab Equipment	1	588223
Modification of Eq/Ship & Marine Equipment	4	235784
Modification of Eq/Ships-Sml Craft Docks	1	87528
Modification of Eq/Training Aids & Devices	4	14184
Msc Electrical and Electronic Components	14	716531
Msl Aircraft Accessories and Components	17	21676353
Natural Resource Studies	1	99170
Non Nuclear Ship Repair (East Coast)	20	3367454
Non Nuclear Ship Repair (West Coast)	10	569443
Office Furniture	1	31065
Office Supplies	1	48960
Operational Training Devices	2	5100000
Operations Research Services	2	231405
Other Administrative Support Services	1	218464
Other ADP & Telecommunication Services	97	18984708
Other Architect & Engineering Services	17	1555576
Other Education & Training Services	4	3127960
Other Housekeeping Services	9	2148133
Other Management Support Services	104	28179047
Other Medical Services	2	156000
Other Photographic Mapping, Printing, & Pub Svcs	4	173575
Other Professional Services	22	4017367
Other Quality Cntl, Testing & Inspection Svcs	15	725734
Other Special Studies and Analysis	13	1920110
Other Transportation Travel & Relocation Svcs	1	25000
Personnel Testing	1	3000000
Physical Properties Testing Equipment	1	104409
Plumbing Fixtures and Accessories	1	32537
Policy Review/Development Services	5	477324
Power and Hand Pumps	1	33461
Program Evaluation Services	7	569558
Program Management/Support Services	377	91761742
Program Review/Development Services	45	6501836
RADAR Equipment, Except Airborne	2	1674767
Radio Navigation Equip, Except Airborne	2	384455
RDTE/Aircraft Engineering Development	2	286543
RDTE/Electronics & Communication Eq Advanced Dev	8	1834733
RDTE/Electronics & Communication Eq Engr Devel	18	5449057
RDTE/Electronics & Communication Eq Explor Devel	1	47103
RDTE/Electronics & Communication Eq Mgmt & Spprt	1	76000
RDTE/Electronics & Communication Eq Op Sys Dev	1	1021513
RDTE/Math & Computer Sciences Op Sys Develop	3	1340124
RDTE/Misc Hard Goods-Op Systems Development	2	63323
RDTE/Missile and Space Systems Advanced Develop	6	444162
RDTE/Missile and Space Systems Explor Develop	1	30295
RDTE/Other Defense Advanced Development	19	3809695

NAME/DESCRIPTION	TOTAL ACTIONS	TOTAL DOLLARS
RDTE/Other Defense Basic Research	33	\$5966498
RDTE/Other Defense Engineering Development	2	378500
RDTE/Other Defense Exploratory Development	11	1837206
RDTE/Other Defense Management & Support	13	3188141
RDTE/Other Defense Operational Systems Develop	1	427381
RDTE/Other Environmental Protection,Basic Resrch	2	217594
RDTE/Other Research and Development,Advd Develop	1	90000
RDTE/Other Research and Development,Basc Resrch	26	5200549
RDTE/Other Research and Development,Engr Develop	8	1180081
RDTE/Other Research and Development,Explor Devel	9	770260
RDTE/Other Research and Development,Mgmt & Sprt	36	3949630
RDTE/Other Research and Development,Op Sys Dev	1	87934
RDTE/Other Sciences Operational Systems Develop	3	125142
RDTE/Services, Advanced Development	21	2165434
RDTE/Services, Engineering Development	11	1222709
RDTE/Services, Exploratory Development	5	119813
RDTE/Services, Management & Support	8	498931
RDTE/Services, Operational Systems Development	26	1827769
RDTE/Ships, Advanced Development	9	1107883
RDTE/Ships, Basic Research	6	5525903
RDTE/Ships, Engineering Development	3	109598
RDTE/Ships, Exploratory Development	23	2656777
RDTE/Ships, Management & Support	5	318166
RDTE/Ships, Op Systems Development	26	2409840
RDTE/Textiles, Clothing, Equipage, Advanced Devel	1	61300
RDTE/Weapons, Engineering Development	8	704008
RDTE/Weapons, Operational Systems Development	4	260970
Security Studies (Physical & Personal)	2	511774
Sets, Kits and Outfits of Measuring Tools	3	1632368
Ship and Boat Propulsion Components	1	53723
Simulation	4	285204
Space Vehicle Components	5	421888
Specifications Development Services	1	33846
Systems Engineering Services	186	32268086
Tech Rep Svcs/Bearings	1	43991
Tech Rep Svcs/Communication Equipment	294	27892479
Tech Rep Svcs/Electrical & Elct Equip Comps	9	604617
Tech Rep Svcs/Engines, Turbines & Comps	1	31956
Tech Rep Svcs/Miscellaneous Equipment	13	835233
Tech Rep Svcs/Ship & Marine Equipment	7	320958
Tech Rep Svcs/Training Aids & Devices	5	426627
Technical Assistance	11	777734
Technology Sharing/Utilization Services	9	7007743
Technology Studies	22	4255781
Telephone and/or Communications Services	2	182462
Teletype and Facsimile Equipment	2	80600
Toxic Substances Support Services	1	38122
Training Aids	8	2248313

NAME/DESCRIPTION	TOTAL ACTIONS	TOTAL DOLLARS
Training/Curriculum Development	5	\$526406
Underwater Sound Equipment	1	276000
Valves, Powered	1	188494
Vessel Freight	1	7944407
Vocational/Technical	1	25517
Warehousing & Storage Services	1	2833909
Word Processing/Typing Services	4	124160
TOTAL.....	5195 actions...	\$878,090,211

Source: [Ref. 14]

APPENDIX D

POST AWARD ORIENTATION CONFERENCE SAMPLE AGENDA

- I. Introduction/Purpose
- II. Review of Basic Contract
 - a. T & M Contract Characteristics
 - b. Scheduling
 - 1) Ordering Period (Give dates)
 - 2) Performance Period (Give dates)
 - c. Contract Line Item Descriptions
 - d. Contract Ceiling Price (Give amount)
 - e. Requirements of Statement of Work
- III. Delivery Order/Contract Administration
 - a. Results of I.G. Inspections
 - b. Quality Assurance Surveillance
 - 1) Timecard/Floorchecks
 - 2) FAR 52.215-2 - Audit Negotiations
 - 3) FAR 52.246-6 - Inspection under T & M contract
 - c. FAR 52.232-7 Payments under T & M contracts
 - 1) Payment Procedures
 - 2) Letter of Transmittal/DD-250's
 - 3) FAR 52.246-6 & 7 - T & M Inspection Clause
 - d. Delivery Order Changes
 - 1) Contractual Engineering Task Amendments
 - 2) FAR 52.243-3 - Dollar/Schedule Changes
 - e. Material Acquisition
 - 1) Procedures
 - 2) FAR 52.244-3 - Subcontract Approval
 - 3) FAR 52.245-5 - Government Property (T & M)
 - f. Travel Authorization
 - 1) Procedures (CLIN Description)
 - 2) Per Diem vs. Relocation Costs
 - g. Review of Additional Contract Clauses
 - h. Personal vs. Non-Personal Services
- IV. Open Discussion

Source: [Ref. 40]

APPENDIX E

LABOR REVIEW CHECKLIST

THE FOLLOWING CHECKLIST CAN BE USED IN REVIEWING THE CONTRACTOR'S LABOR AND PAYROLL SYSTEMS.

1. Does the contractor have written policies and procedures in which it communicates to all employees the importance of charging the appropriate work order when completing time records? Is appropriate guidance given to employees to insure against errors in labor charging?
2. Does the contractor have a policy for recording uncompensated labor (mainly overtime of salaried employees) where it is considered to be material? This may affect the amount of indirect expense allocated to contracts.
3. Are time records required to be completed by the employee and approved by his or her supervisor?
4. Does the internal audit department perform floor checks and monitor the charging of labor costs?
5. Is compensated overtime authorized only where it is stipulated in the contract or approved by the contracting officer?
6. With respect to labor transfer documents:
 - a. Are they numerically controlled?
 - b. Do they require the signature of the employee and the employee's supervisor approving the transfer prior to being processed?
 - c. Do they require an explanation of the transfer and appropriate supporting data?
 - d. Is it required that the documents be processed in a timely manner?
7. Have procedures been established for the coding and recording of idle time?
8. Is there a written work authorization for all labor charged?

9. Is the classification and identification of employees (i.e., direct versus indirect) appropriate to the way in which they actually charge their time?

10. Is it possible to verify the integrity of labor charging through physical progress or documented evidence of work performed?

JOB SITE ACCOUNTING PROCEDURES

TIMEKEEPING

1. Before badges are issued, is a check made to determine that all badges are accounted for?

2. Is the employee prevented from obtaining or returning more than one badge?

3. Is an absentee report prepared by the timekeepers for all craft employees who have not reported to work when the badge shack is closed?

4. Is a log maintained of craft employees who arrive or depart at irregular times?

5. Is log forwarded directly to the timekeeping department?

6. Is a foremen's daily time record submitted by each craft foreman, indicating the hours worked by task for each crew member?

7. Are these foremen's daily time records approved by supervisory personnel?

8. Are the cost distribution accounts entered on the foremen's daily time records by the cost engineer?

9. Are the hours on the foremen's daily time record balanced in detail or in total by craft to the hours derived from the absentee and irregular hours reports?

10. Do the timekeepers or other appropriate personnel make daily head counts of craft employees while at work on the job site?

PREPARATION OF PAYROLL

1. Are the hours posted from the daily time records to the payroll register?

2. Are rates entered in the payroll register determined by reference to the appropriate labor agreements and to the daily time records for the tasks performed?

3. Are the payroll calculations checked by employees who take no part in its preparation?

4. Is the completed payroll checked against input data?

5. Before checks are signed, is the completed payroll reviewed and approved in writing by the Field Office Manager and/or Resident Construction Manager?

Source: [Ref. 41:p. 143]

APPENDIX F

MATERIAL REQUEST CHECKLIST

THE FOLLOWING CHECKLIST APPLIES TO CONTRACTOR REQUESTS FOR AUTHORIZATION TO PURCHASE MATERIAL UNDER THE REIMBURSABLE MATERIAL LINE ITEM ON A TIME & MATERIALS TYPE CONTRACT.

1. Will the material requested be consumed in the manufacture of a prototype in support of the deliverable data item in the schedule? If YES, go to 2. If NO, go to 7.
2. Is the material necessary for performance on the order? If YES, go to 3. If NO, go to 7.
3. Is the material ADP? If YES, go to 4. If NO, go to 5.
4. Is the ADP designated a Mission Critical Computer Resource (MCCR)? If YES, go to 5. If NO, go to 7. See NOTE.
5. Can the material be provided as GFP? If YES, go to 6. If NO, go to 8.
6. The material authorization should be denied and the material provided by the Government.
7. The material purchase should be denied as it is not properly a reimbursable item under the contract.
8. Is the proposed cost of the material reasonable? If YES, go to 9. If NO, go to 10.
9. The material purchase request should be approved.
10. The material purchase request should be disapproved, and discussions held with the contractor to resolve the difference in proposed and reasonable costs. Once the cost issue has been resolved, the request should be approved.

NOTE: For more information on MCCR, see Public Law 97-86, 10 U.S.C. 2315, the Nunn Warner Amendment to Brooks Act.

Source: [Ref. 42]

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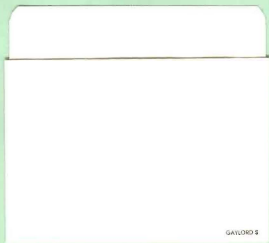
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